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PART IV

ASIA

WITH 140 MAPS AND DIAGRAMS

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GENERAL PREFACE

IN the second part of my *Intermediate Commercial Geography*, which was entitled "The Economic Geography of the Leading Countries," a detailed account was given of the regional geography of a number of principal countries of the world, but only very brief comments on the others. It is inevitable that any such selection must be an arbitrary matter and not suitable for all purposes. The rapid exhaustion of the first edition of this book and the call for a second edition seemed to offer an opportunity for the publication of the work in Parts, and led to the preparation of the present series of books. As the change in title suggests, however, the present series is much more than a reprint in Parts of the *Intermediate Commercial Geography*. The account of those countries whose regional geography was treated at length in the latter work, will be found reprinted in the present series almost without alteration, but there are numerous additions dealing with smaller countries. Thus the accounts, to take concrete examples, of Canada, the United States, the Union of South Africa, Australia, New Zealand, etc., are practically unchanged, but the sections on such areas as East Africa, Tropical West Africa, Central America, East and West Indies, Siberia, etc., are entirely new. In the *Intermediate Commercial Geography* the space which was devoted to the countries of Europe was of necessity much restricted, and in particular the account of the British Isles was only a brief summary. This was justified because of the extensive study of the British Isles which is usually part of a matriculation course; but in the present work the opportunity has been taken of giving a full treatment to Britain and most of the European countries. Part V, "Europe and the Mediterranean Lands," is, therefore, entirely a new volume. Further, the treatment throughout the present series whilst paying due attention to economic aspects does not lay unnecessary stress on that side of the regional geography.

Again, the present series is intended primarily for the first years of a University course, or for the last years of a High School, Secondary School, or College course: that is, for the post-matriculation stage. In nearly all such courses varying degrees of specialization are now the rule, and the Parts of the present work have been so arranged that students will usually only require two or perhaps

three of the separate volumes. It is hoped that the series will cover the requirements of all the Intermediate courses in geography of the University of London, the corresponding courses for the Higher School Certificates of the Northern Universities Joint Board, the Central Welsh Board, and the University of London, together with all examinations of an equivalent standard in various parts of the world.

On previous occasions I have received the greatest assistance from correspondents pointing out errors or imperfections, and I should be very grateful to any one who will take the trouble to point out any improvements desirable in these volumes.

L. D. S.

LONDON SCHOOL OF ECONOMICS.

October, 1930.

NOTE TO PART IV

ASIA

IN this part the sections on the continent as a whole, the Indian Empire, Ceylon, China and Japan remain substantially unchanged, but there is a new and extended treatment of South-Eastern Asia and the East Indies, Asiatic Russia, Turkey, Syria, Palestine, Iraq, Arabia, and Persia.

L. D. S.

RECENT STATISTICS

During the printing of this volume the following statistics have become available and may be used for bringing the diagrams up-to-date.

Page 21 : India. Value of mineral production in 1928 (£ millions)—coal, 6·6 ; petroleum, 4·3 ; manganese ore, 2·3 ; lead, 1·6 ; gold, 1·6 ; building materials, 1·1 ; silver, 0·9 ; salt, 0·7 ; mica, 0·7 ; zinc ore, 0·6 ; iron ore, 0·4 ; copper ore, 0·4 ; tin ore, 0·3.

Page 25 : India. Acreage of chief crops for 1928–29 (millions of acres)—rice, 82·3 ; wheat, 32·0 ; sugar cane, 2·6 ; linseed, 3·1 ; rape and mustard, 6·9 ; sesamum, 5·4 ; groundnuts, 6·1 ; cotton, 26·5 ; jute, 3·1 ; tea, 0·8 ; rubber, 0·2 ; indigo, 0·1.

Page 44 : India. Value of exports (merchandise, bullion and specie) for 1928—337 crores of rupees.

Page 45 : India. Value of imports (merchandise, bullion and specie) for 1928—297 crores of rupees (corrected figure for 1927 is 293 crores).

Page 117, Fig. 93 : China. Value of exports 1927—£129,400,000 ; 1928—£144,800,000.

Page 117, Fig. 95 : China. Value of net imports, 1927—£142,700,000 ; 1928—£174,600,000.

Page 128 : Japan. Copper output in 1928—150,500,000 lbs.

Page 133 : Japan. Value of principal industries (£ millions)—cotton goods, 42·7 ; silk goods, 42·7 ; Japanese paper, 5·5 ; European paper, 12·4 ; matches, 1·6 ; earthenware, 17·4 ; lacquered ware, 3·1 ; matting, 2·2 ; oil, 4·0.

Page 137 : Taiwan. Production of coal 1927—1,860,000 tons.

ASIA

GENERAL CONSIDERATIONS

Position and Size.—Asia is the largest of all the continents and comprises nearly one-third of the land of the globe. With the exception of some of the islands of the East Indies, it is situated entirely in the Northern Hemisphere. It stretches from the frozen shores of the Arctic Ocean, far inside the Arctic Circle, into the

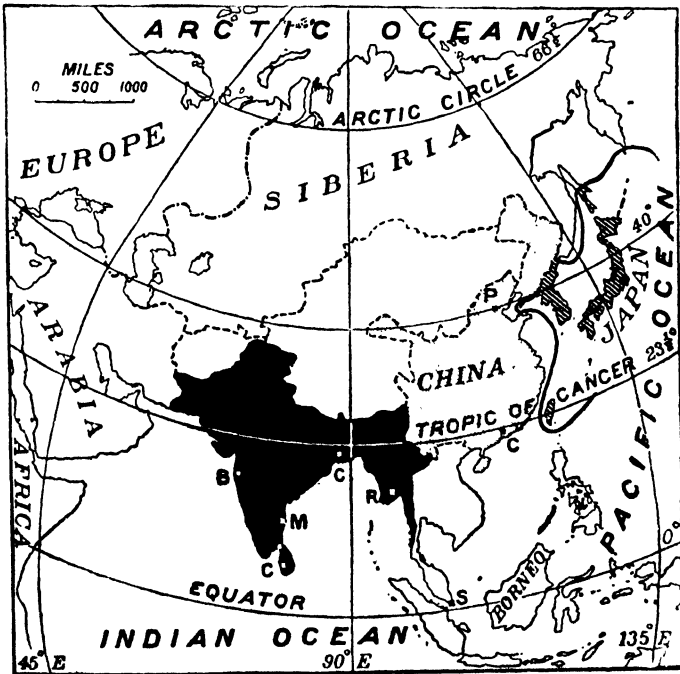


FIG. 1.—The position and size of Asia.

The approximate latitudes of the towns marked should be noted.

Tropics, and the southernmost part of the mainland near Singapore nearly reaches the equator. From west to east it stretches from 25° E. to 170° E.—around more than one-third of the Earth's circumference. Some parts of Central Asia are more than 1,500 miles from the sea. The positions of the Arctic Circle (66½° N.) and the

Tropic of Cancer should be carefully noted and also the central meridian, 90° E. In particular the situation of India and China in relation to these lines and the latitude of Japan when compared with the British Isles and the New England States should be noticed.

Physical Features.—The great continent of Asia can be divided, according to its structure or physical features, into four parts. This division has been made in Fig. 2.

1. *The Northern Lowlands*, forming a great triangle of low land bordered on the north by the Arctic Ocean. This great

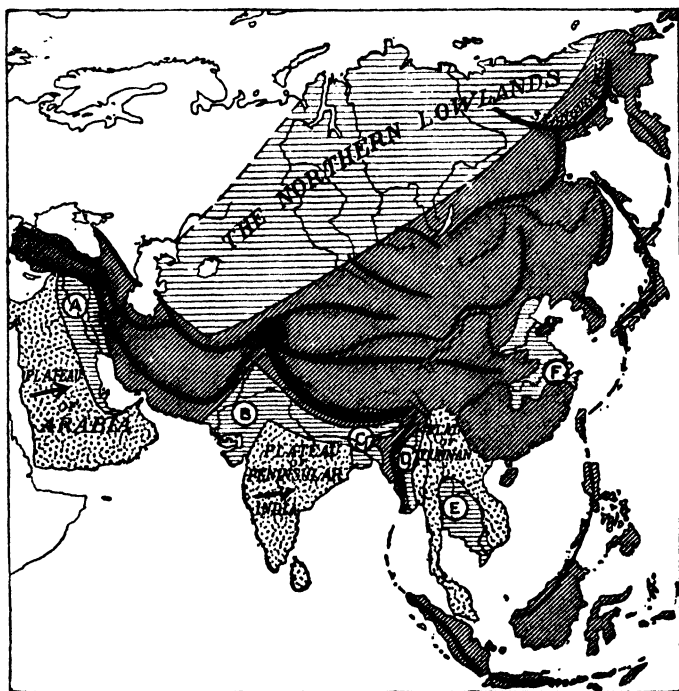


FIG. 2.—The main physical features of Asia.

area of lowland, comprising most of Siberia, is only separated from the Great European Plain by the low range of the Ural Mountains.

2. *The Central Triangle of Young Folded Mountains* and the plateaus which they enclose. This is a great area of highlands and mountains forming a triangle in the centre of Asia. There is a big extension from the triangle running westwards and ending in Asia Minor, and there are other extensions—lines of folded mountains running away to the south-east and forming some of the ranges of Indo-China and the East Indies.

3. *The Old Plateaus of the South*, formed mainly of old, hard, crystalline rocks. There are three big masses: (a) the Plateau of Arabia; (b) the Plateau of Peninsular India; and (c) the Plateau of Yunnan and Indo-China.

4. *The Great River Valleys*, found between the old plateaus and the fold mountains. These are the basins of the Tigris and Euphrates, the Indus, the Ganges-Brahmaputra, Irrawaddy, etc.

Each of these physical divisions may now be considered in order.

1. *The Northern Lowlands*.—This great plain is formed of the basins of the Ob, Yenisei, and Lena. In the south-west is a small area of inland drainage, draining into the Sea of Aral. The three great rivers are very long and very slow, for the slope

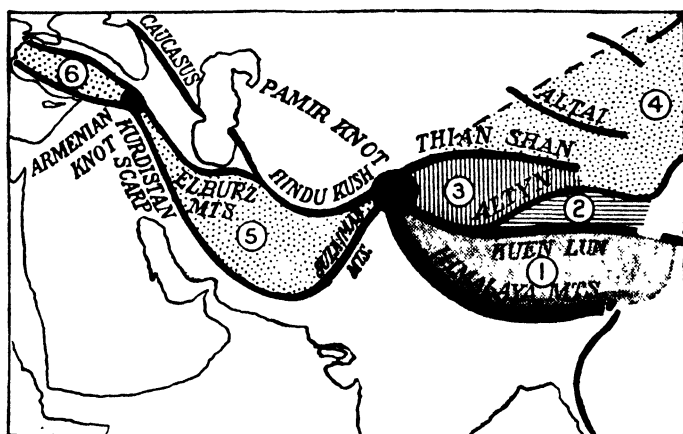


FIG. 3.—Key to the mountain ranges shown in Fig. 2.

down to the Arctic Ocean is very gradual. The rivers flow towards the very cold north, and their lower courses are frozen for many months of the year. When this happens the water from the upper courses cannot escape to the sea, but spreads over the land and forms great swamps.

2. *The Central Mountainous Triangle*.—To understand the numerous mountain ranges let us start from the Pamir Knot. They are shown, very much simplified, in Fig. 3. From this region mountain ranges radiate in nearly all directions.

To the west there are two main ranges. One runs south-west as the Sulaiman Mountains, continued beyond the Bolan Pass as the Kirthar Range, and then along the coast of the Persian Gulf (Makran Coast), continuing as the Kurdistan scarp into Asia Minor, where it joins up with the northern branch to form the Armenian

Knot. Thence it runs along the southern coast of Asia Minor as the Taurus Mountains. The other branch runs westwards as the Hindu Kush, along the north of Persia, the shores of the Caspian Sea (Elburz Mountains), and along the northern coast of Asia Minor. Just where this line enters Asia Minor it joins up, as already noted, with the southern branch to form the Armenian Knot. A branch from this northern line forms the Caucasus Mountains.

Running eastwards from the Pamir Knot there are four main lines. The most southerly is the greatest range in the world—the Himalayas. Further north are the two ranges, close together, of the Kunlun and Altyn Mountains. Still further north are the Tien Shan Mountains. The latter forms one of several ranges and chains of mountains, such as the Altai, which run roughly from east to west and together make up a composite line extending north-eastwards from the Pamir Knot right across Asia.

There remain for consideration two other groups of young fold mountains:

(a) Running at first south-westwards and then southwards from the eastern end of the Himalayas is a big fold which passes through Burma as the Arakan Yomas, continues through the Andaman and Nicobar Islands to Sumatra and Java and other islands of the East Indies.

(b) Forming “festoons” or loops down the east coast of Asia are the mountain chains which form the Kurile Islands, the Japanese Islands, the Riu Kiu Islands, the Philippines, etc. On the mainland are other mountain loops such as the Stanovoi and Verkhoyansk ranges.

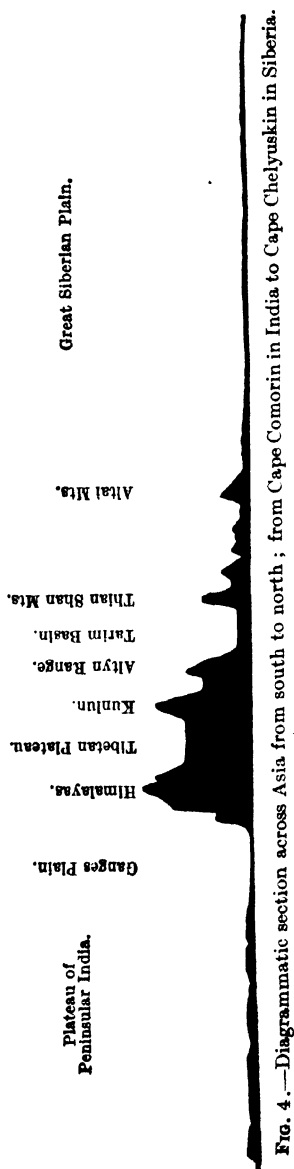


FIG. 4.—Diagrammatic section across Asia from south to north; from Cape Comorin in India to Cape Chelyuskin in Siberia.

Between the great lines of fold mountains are the plateaus; many of them are nearly level plains surrounded by the ring of

mountains and forming areas of inland drainage. They are marked by the following numbers on Fig. 3 :

1. The plateau of Tibet, or the "Roof of the World," is the highest plateau in the world—more than 12,000 feet above sea-level. It lies between the Himalaya Mountains on the south and the Kunlun on the north.

2. There is a small basin slightly lower, between the Kunlun and Altyn ranges. It is largely occupied by a swamp.

3. The Tarim Basin is an important area lying between the Altyn Mountains and the Tien Shan. It is a dry region; what water there is drains inwards into a small lake.

4. The Desert of Gobi, or Shamo, forms an enormous plateau south of the Altai and Yablonoi Mountains and north-east of the Altyn Mountains.

5. The plateau of Iran, occupying most of Persia, lies between the northern and southern ranges which run westwards from the Pamir Knot.

6. The plateau of Asia Minor west of the Armenian Knot, between the Black Sea and the Mediterranean.

The position of these plateaus is most easily remembered in connection with the mountain ranges by which they are enclosed.

The important rivers draining eastwards from the mountain triangle to the Pacific Ocean should be noted. The largest are the Amur, Hwang Ho, Yangtze.

3. *The Old Plateaus of the South.*—Arabia is a great plateau of old, hard rocks, which shows a steep edge to the Red Sea on the west and slopes gradually to the east till it passes into the Tigris Valley. The slope is very gradual and not much broken up, for the country is dry and there are few rivers.

(a) The plateau of Peninsular India also slopes from west to east. The steep western edge forms the Western Ghats, the low eastern edge the Eastern Ghats. This plateau is much cut up by rivers like the Mahanadi and Godavari.

(b) The plateau of Yunnan and Indo-China stretches from the Shan States in Burma eastwards. A long branch of old rocks runs down into the Malay Peninsula. This plateau is also much broken up by rivers, such as the Salween, Mekong, and the upper course of the Yangtze.

4. *The Great River Valleys.*—These are fertile areas of lowland with vast stretches of alluvial soil. Note their position on the map (Fig. 2)—the Tigris and Euphrates Basin (A), the Indus Basin (B), the Ganges-Brahmaputra Basin (C), the Irrawaddy Basin (D), the Mekong Basin (E), and the Yangtze Basin (F).

Before leaving this section study Fig. 4, which is a section across Asia from south to north. In the south, notice the low tableland of Peninsular India; then the broad, flat plain of the Ganges; and then the sudden rise to the enormously high Himalaya Mountains. To the north of the Himalaya Mountains there is a gradual descent to the Arctic Ocean by means of a series of "steps" or terraces. The plateau of Tibet is the highest step; going north-

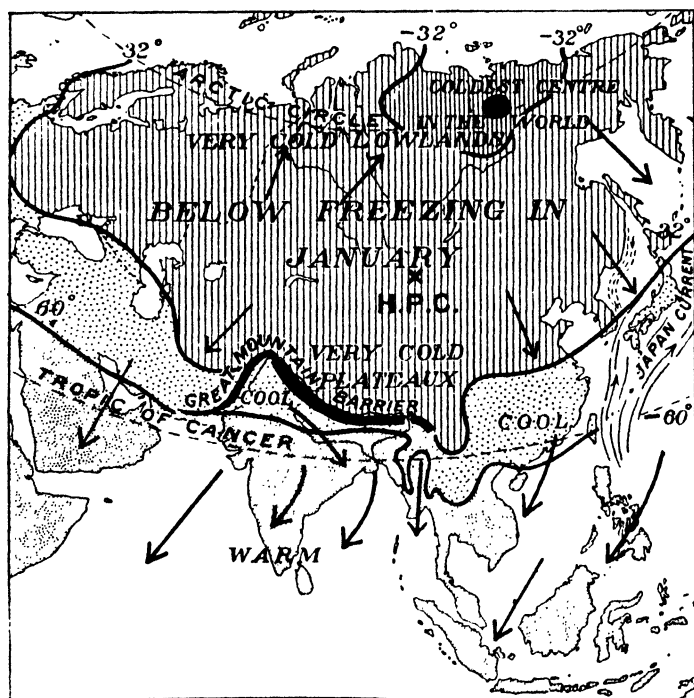


FIG. 5.—Conditions in the cold season showing January temperatures and winds.

Notice that the whole of Asia north of the great Himalayan mountain barrier is freezing in January. Notice the cold, dry winds blowing outwards from Central Asia; they make China and Persia cold, but are little felt in India. The warm Japan current keeps Japan warm.

wards the steps become gradually lower till the great Northern Plain is reached.

Climate.—In considering the climate of North America it was noted that two physical factors were of paramount importance in determining the climates of the continent. The same is true of Asia, but the conditions are the reverse of those found in North America. In the first place there is a great mountain barrier—the Himalayas—running from east to west which cuts off the south of

the continent completely from the north. In the second place the centre of Asia is occupied by a great mass of mountains and highland, far removed from the sea, and is therefore subject to great extremes of temperature.

Winter conditions are illustrated in Fig. 5. The centre and north become very cold indeed, so that there is an enormous mass of cold air all over the centre of Asia. This gives rise to a region of high pressure with strong, cold, outblowing winds during the

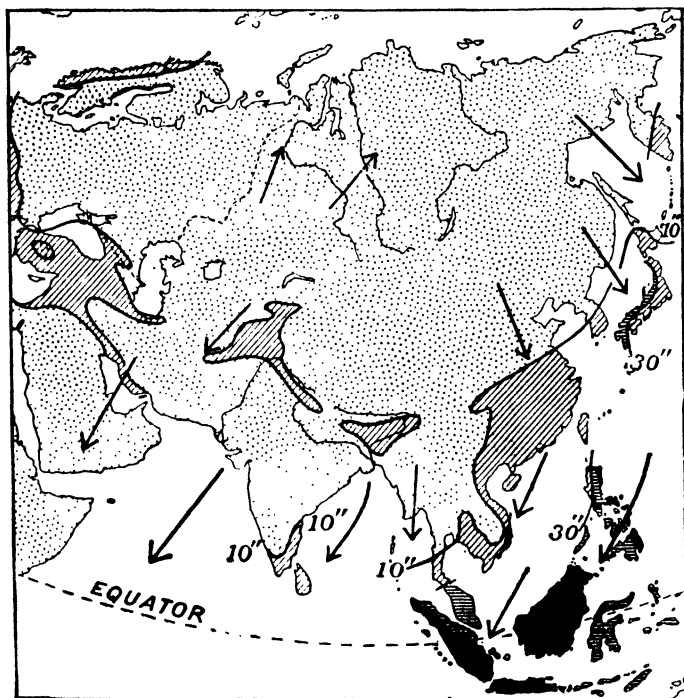


FIG. 6.—Conditions in the cold season—rainfall from November 1st to April 30th.

The cold winds bring very little rain except after they have crossed the sea. The rainfall lines marked are 10, 30, and 60 inches. Regions with more than 60 inches shown in black.

winter months. The winds are dry because they are land winds; the only regions where they become damp are where they cross some area of sea. As shown in Fig. 6, nearly the whole of Asia receives very little rain in winter. The exceptions—notably the north coasts of Japan and the East Indies—should be noted. It is particularly during winter that the Himalaya Mountains form a great climatic barrier and prevent India from feeling the cold winds from Central Asia such as sweep over China.

Summer conditions are shown in Fig. 7. In summer the interior of Asia becomes very hot and low-pressure areas are formed. The chief of these is in the north-west of India over the Punjab plains, and is responsible for the well-known Indian monsoon. Although at a considerable elevation, the interior plateaus with the Desert of Gobi become greatly heated, but the winds which are drawn in across China towards these centres are not as strong as the south-west monsoon of India. The inflowing winds of summer

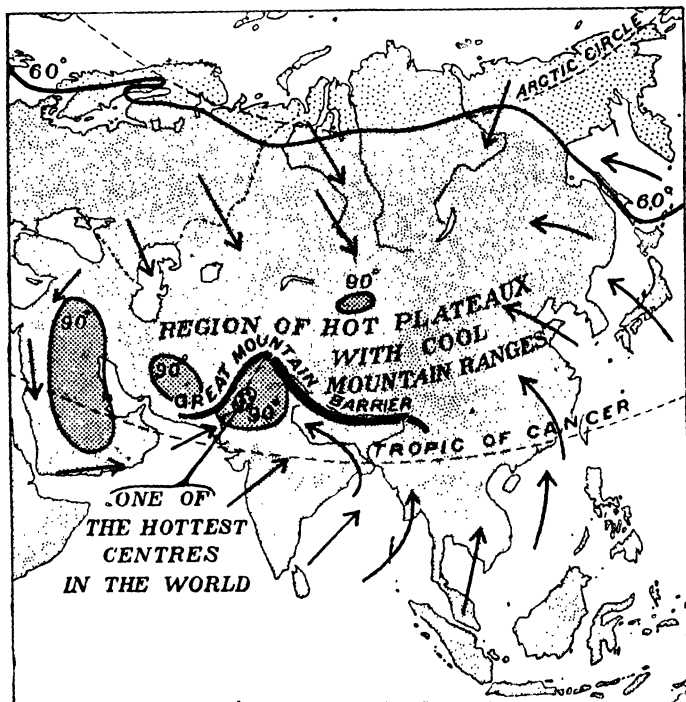


FIG. 7.—Conditions in the hot season showing July temperatures and winds.

The sun is shining vertically over the Tropic of Cancer and large areas get very hot. The cool rain-bearing winds are blowing inwards towards the low-pressure centres lying over the hot areas.

are from the ocean, and therefore moisture laden. As shown in Fig. 8, summer is the rainy season over most of Asia.

Climatic and Natural Vegetation Regions.—Nearly all the principal types of climate are represented in Asia with the exception of the tropical.

The Tundra stretches as a belt across the north (Arctic climate).

The Coniferous Forest Belt lies to the south of the Tundra and also stretches right across the continent (Cold Temperate Climate).

It should be remembered that much of the forest suffers from the marshy nature of the Siberian lowlands.

The *Temperate Grasslands* or Steppes occupy two principal areas—South-Western Siberia and a fringe round the Mongolian plateau. The latter area is perhaps the least developed of all the tracts of temperate grassland in the world (Temperate Continental Climate).

Mediterranean Vegetation occupies a small area in the south-

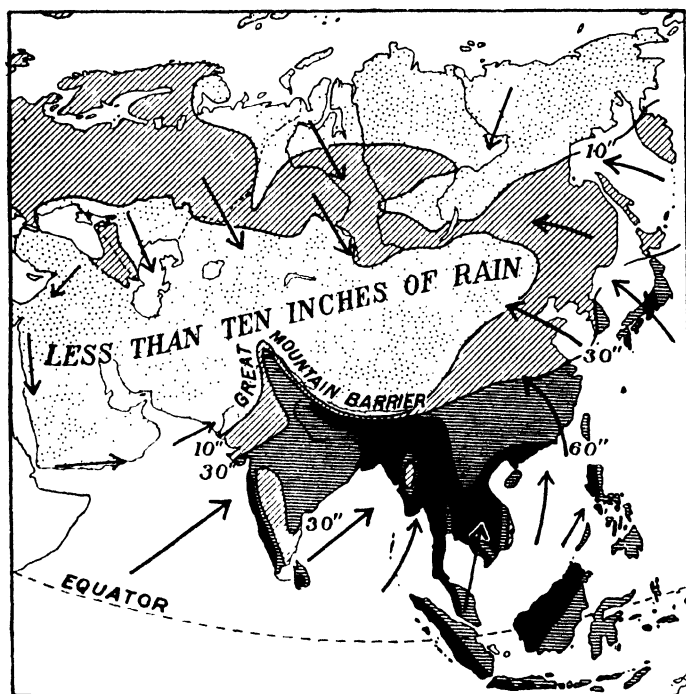


FIG. 8.—Conditions in the hot season—rainfall from May 1st to October 31st.

The warm moist winds bring a heavy rainfall to the coasts. All parts marked black have more than 60 inches of rainfall. But the winds lose all their moisture before they reach the hot interior of the continent, which has less than ten inches of rain in the half-year.

west of Asia—the fringes of Asia Minor and Syria, where the continent borders the Mediterranean Sea. Much of Mesopotamia and, indeed, of Persia and Baluchistan might be described as having a very dry type of Mediterranean Climate.

Deserts and Semi-deserts occupy a very large area in South-Western and Central Asia, as shown in Fig. 9 (Hot and Temperate Desert Climates).

Temperate Deciduous Forests are not a characteristic type of

Asiatic vegetation. As in North-Eastern America there is, in North-Eastern Asia, an area with a Laurentian type of climate and though deciduous trees flourish, coniferous trees are more conspicuous in the natural vegetation (e.g. Japan).

Warm Temperate Forests may be described as the characteristic vegetation of China, though the forests themselves have been removed over very large areas (China type of Climate).

Monsoon Forests vary in character according to the amount of

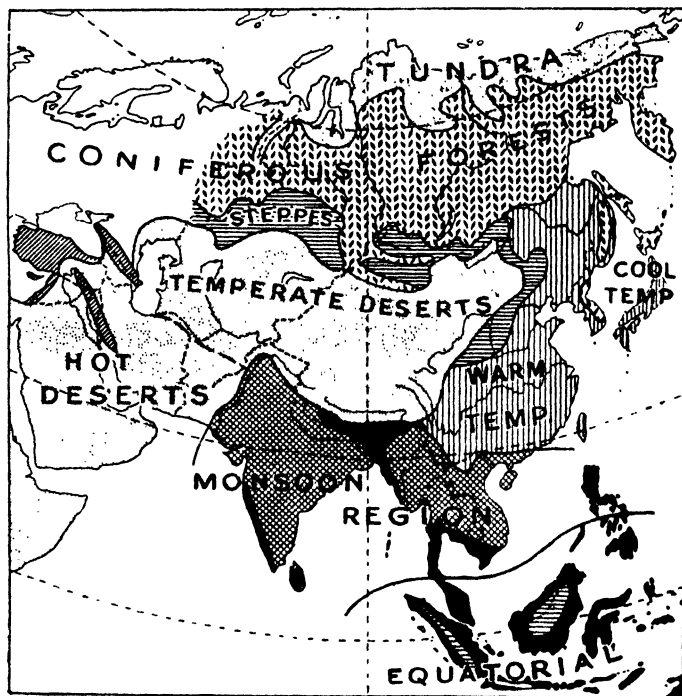


FIG. 9.—The natural vegetation of Asia.

Compare this map with what is said about the climates of Asia. In the part marked "Monsoon Region" evergreen forests are found in the wettest parts, monsoon forest in the areas with a moderate rainfall; scrubland where the rainfall is poor, and desert in the driest parts.

rainfall, and will be described in detail under India (Tropical Monsoon Climate).

Hot, wet, evergreen forests are not restricted to the area having a typically Equatorial Climate, but extend also, as shown in Fig. 9, to the wetter parts of the monsoon lands.

Population.—Asia, which is the largest continent, has also more people than any other continent. But, curiously enough, most of the people are found in two countries—India and China. Look at Fig. 10 and notice how thickly populated these countries

are in comparison with other parts. There are also large numbers of people in Japan and the East Indies. Just as the Himalayas form a great climatic barrier, so they form also a great barrier to man, and divide the two great races of mankind—the yellow-skinned, oblique-eyed Mongolians on the one side and the brown-skinned Indo-Europeans (including the Indians) on the other.

Asia is often called the continent of extremes. It has the highest mountains and the highest plateaus as well as the largest

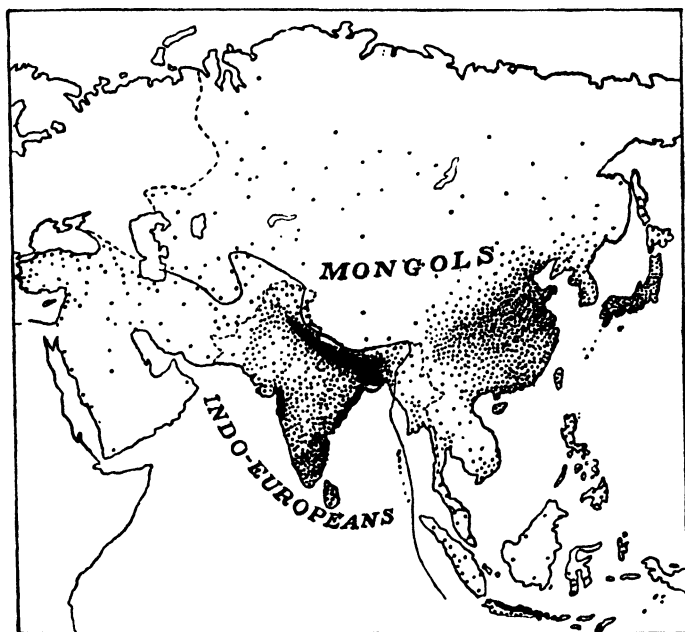


FIG. 10.—The population of Asia.

Each dot represents half a million people. Notice that the thickly populated countries are India, China, Japan, and Java. This little map is drawn on Gall's Projection, and so Asia appears a different shape from what it does on Figs. 5-9.

stretches of lowland in the world ; it has the coldest as well as some of the hottest places, the wettest and some of the driest, the most thickly populated and some of the most thinly peopled lands in the world.

THE INDIAN EMPIRE ¹

India is one of the most fertile and most thickly populated countries in the world ; her people are the most advanced of all the races living in the Tropics, and boast a history of greatness going

¹ This section is based on the "Regional Geographies of India," Part IV, by L. D. Stamp (Longmans).

back for many thousands of years. At the present time India is achieving a greater unity than ever before. A common government and the use of English as a common language has done much to cement together for the first time 320,000,000 people of different races, languages, and religions. Thus unified, India is fast taking her rightful place amongst the great commercial nations of the world.

India is naturally shut in and defended by a great wall of mountains. There are three parts which lie outside the wall but still form part of the Indian Empire. They are the unimportant dry lands of Baluchistan ; the cold uninhabited plateau of Northern

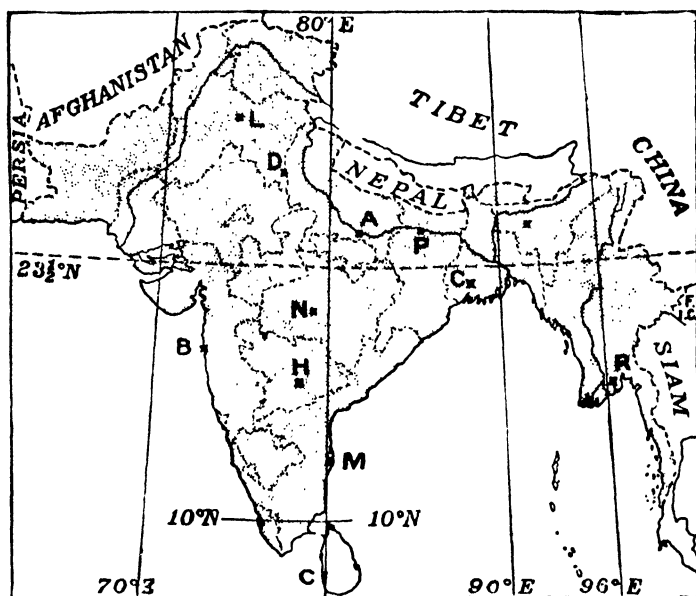


FIG. 11.—The position of India.

Kashmir ; and the large, important, and fertile land of Burma. In many ways Burma is quite different from the rest of the Indian Empire. There are two areas lying inside the wall which do *not* form part of India—the independent state of Nepal and the island of Ceylon.

Position and Size.—India lies entirely to the north of the equator. The southernmost point of the mainland, Cape Comorin, is in latitude 8° N. The Tropic of Cancer passes right through India, cutting the country into two. Although roughly half of India lies outside the Tropics, in the Temperate Zone, we always think of India as a tropical country, because it is well marked off from the rest of Asia by its mountain wall, and has a common type

of climate throughout. The Indian Empire stretches from longitude 61° E. to 101° E.—that is, one-ninth of the way round the globe. Longitude 70° E. passes through the Indus Valley, and 90° through the Delta of the Ganges.

India has 6,000 miles of land frontier and 5,000 miles of sea frontier, and an area of 1,800,000 square miles. Notice the favourable position of India for sea trade—with Europe *vid* the Suez Canal; with Africa; with the Far East *vid* Singapore; and with Australia. India takes its standard time from the meridian of $82^{\circ} 30'$, which is $5\frac{1}{2}$ hours ahead of Greenwich time. Burma has its own standard time, and Calcutta uses its own local time.

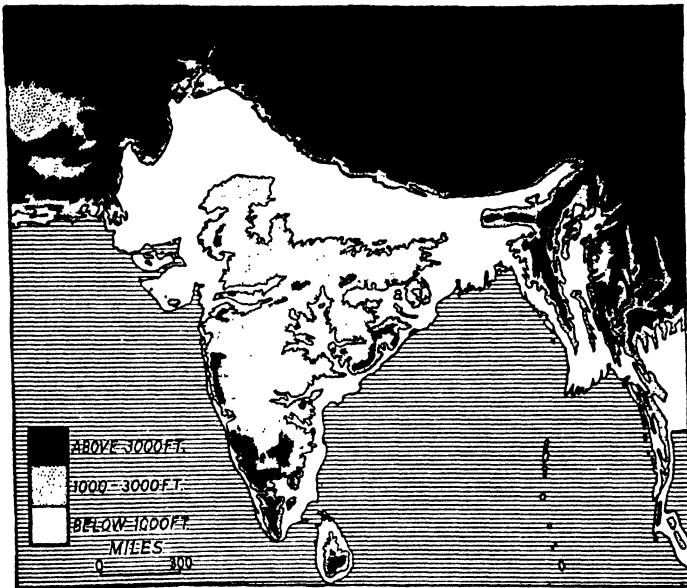


FIG. 12.—Physical or contour map of India.

Physical Features.—India is divisible into three main parts :

1. A great mountain wall.
2. A great lowland plain, the plain of Hindustan, through which flow three great rivers, the Indus, Ganges, and Brahmaputra and their tributaries.
3. A great plateau, the plateau of Peninsular India.

A fourth division must be added for Burma. Burma is composed chiefly of mountain ridges and long river valleys, nearly all running from north to south. Only one part of Burma is really flat, and that is the main valley of the Irrawaddy.

Compared with the size of the country, the coast-line of India

is short, for there are few bays or gulfs. Places in the heart of India, like Delhi and Nagpur, are thus a long way from the sea. The result is that India has few good harbours. The west coast of Peninsular India is rocky, and the sea is deep quite close to the coast. There are three inlets which form good natural harbours—Bombay, Goa, and Cochin; but the last of these is partly blocked by sand. The east coast of Peninsular India is less rocky, but the sea along the coast is too shallow for ships to approach the shore, whilst the surf makes it dangerous to land in small boats. The only important harbour on this coast, Madras, has an artificial harbour. Where the great Plain of Hindustan reaches the coast the

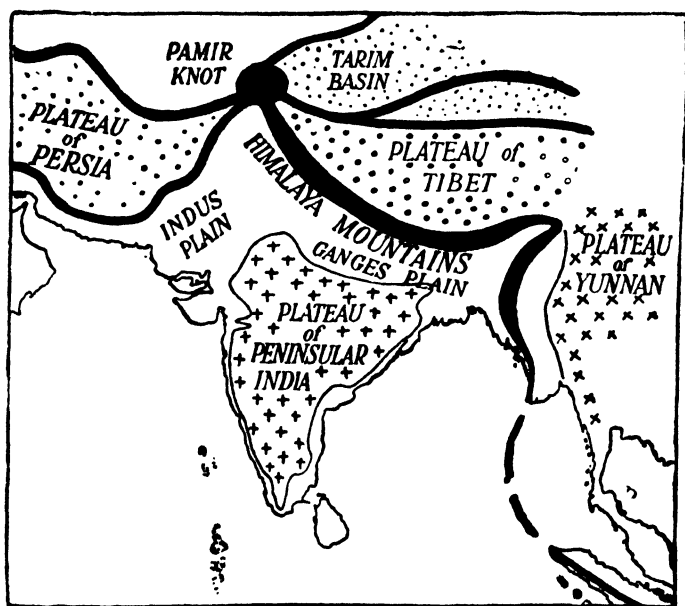


FIG. 13.—The mountains and plateaus of Southern Asia and the physical regions of India.

only harbours are certain river mouths, such as the River Hooghly on which Calcutta stands.

Ceylon is the only important island lying off the coast of India, to which it is very nearly joined by a line of sand-flats and rocks called Adam's Bridge.

The coast-line of Burma is very different from that of the rest of India. Both in Arakan and Tenasserim it is very broken up and fringed with numerous islands. There are numerous inlets suitable for harbours, but high mountains lie close to the coast, and so there are no important ports. The great port of Burma, Rangoon, lies on a river estuary.

The Mountain Wall.—From the Pamir Knot in the north the greatest range of all is that of the Himalayas (the “ abode of snow ”), with many of the highest mountains in the world : Mount Everest, 29,000 feet ; Kinchinjunga, 27,815 feet ; and many others. Another great range, which is really a northern branch of the Himalayas, runs eastwards from the Pamir Knot, and is known as the Karakoram Range. One of its highest peaks is Mount K₂, or Mount Godwin Austin (28,250 feet). To the north of the Himalayan Range lies the plateau of Tibet, the highest in the world.

Running south-westwards from the Pamir Knot and separating India proper from Afghanistan and Baluchistan, is the Sulaiman Range, passing southwards into the Kirthar Range.

The mountain wall between India and Burma has received various names. In the north it is a narrow wall, and is known as the Patkoi Hills ; then it broadens out into the Naga Hills and the Manipur Plateau, sending out a great branch westwards into Assam. This branch forms the Jaintia, Khasi, and Garo Hills. Southwards from Manipur are the Lushai Hills, and then again a narrow wall known as the Arakan Yoma. The Arakan Yoma reaches the sea at Cape Negrais, but is continued in the Andaman and Nicobar Islands.

On the eastern side of Burma there is another series of mountain ranges, running from north to south, near the border of China.

The Plain of Hindustan.—Inside the mountain wall, and forming a great curve from the Arabian Sea to the Bay of Bengal, is one of the most important plains in the world. It occupies the greater part of Northern India, and is more than 2,000 miles from end to end, and usually from 150 to 200 miles broad. This great plain is formed by the basins of three rivers and their tributaries. In the west and draining into the Arabian Sea is the River Indus. Farther east is the River Ganges, which flows south-eastwards into the Bay of Bengal. The city of Delhi, the proud capital of India, stands nearly on the water-parting between these two river basins. Before the Ganges reaches the sea it is joined by the third of the mighty rivers, the Brahmaputra.

Throughout the whole of the plain of Hindustan there is not a hill to be seen. The floors of the river valleys rise so gradually that the slope cannot be seen. Nearly 1,000 miles from the mouth the surface of the River Ganges is only 500 feet above sea-level.

The Plateau.—Nearly the whole of India south of the great plain of Hindustan is occupied by a plateau. The western side is the higher, and the surface slopes down towards the east. The western edge of the tableland is known as the Western Ghats. In the same way the lower eastern edge forms the Eastern Ghats. The Eastern Ghats are interrupted by a number of river valleys. The plateau as a whole is higher in the south—in Mysore—than it is in the north.

Between the Western Ghats and the sea there is a narrow coastal plain; between the Eastern Ghats and the sea there is a broader coastal plain.

The surface of the plateau is by no means smooth. It has been deeply furrowed by river valleys. Then, towards the north a very important line of mountains runs across the plateau from west to east. These mountains are the Satpura Range, continued eastwards as the Mahadeo Hills and Maikal Range. This line is a very important one, for the mountains are not easy to cross, and so it cuts off "Northern India" from what is properly called "Peninsular India." Throughout history this line has been an important barrier. There are two other parallel lines—the Vindhya Range to the north and the Ajanta Range to the south—which have helped to make the line more important.

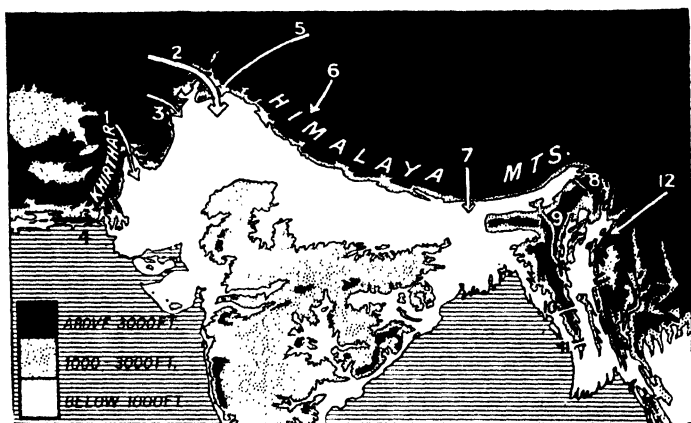


FIG. 14. —The mountain wall of India.

Northwards from the Satpura line the plateau slopes down towards the plain of Hindustan. In the north-west, interrupting the general slope, is the Aravalli Range.

Mountains of Burma.—The mountains of the province of Burma have a north-and-south alignment. In the west is the Arakan Yoma, in the east the Shan Plateau. Between the two is the lower range of the Pegu Yoma.

Doors through the Mountain Wall of India.—Generally speaking the passes through the mountain rampart of India are few and far between. In the north-west the two chief gateways are the Bolan Pass (marked (1) on Fig. 14) and the Khyber Pass (2). Another is the Gomal Pass (3). Another route is along the sea-coast of Makran (4). There are two difficult roads leading from the town of Srinagar in Kashmir, across the Zojila Pass and the Karakoram

Pass (5). From Punjab to Tibet is the Shipki Pass (6); but for hundreds of miles there is no route across the Himalayas until Darjeeling (7) is reached.

Across the mountains between India and Burma there are four main routes—the Tuzu Gap (8), the Manipur Route (9), the An (10), and Taungup (11) Passes. They are very little used, and nearly every one goes to Burma by sea—from Calcutta or Madras to Rangoon. From Burma into China are numbers of routes, of which the most important is the Taping Valley Route (12), *vid* Bhamo.

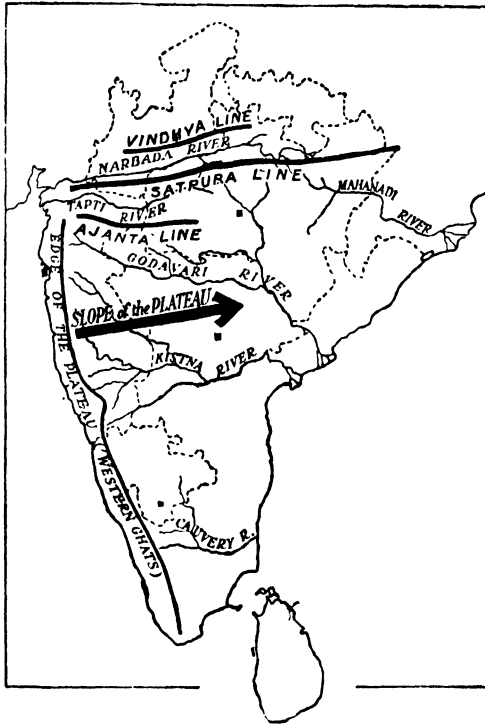


FIG. 15.—The rivers of Peninsular India.

The Rivers of Northern India.—The great rivers of the plain of Hindustan all rise in the mountain wall or beyond it. The rivers are fed with water from the gradual melting of the snow which lies on the mountains. They do not depend for their water entirely on the monsoon rains; they depend on the snow and rain which fall in the mountains at other times of the year. So we find these rivers are never dry; they always have some water in them. In the mountains these rivers are roaring, rushing torrents, pouring through gorges or narrow valleys, over waterfalls, and amongst great boulders. When they reach the plain of Hindustan, they

become slow, broad rivers wandering lazily across the plain. So flat is the valley that often the rivers desert their bed and make a new course. The three great river systems of Northern India are :

1. The Indus River, with its tributaries the Jhelum, Chenab, Ravi, Bias, and Sutlej (the five rivers of the Punjab).
2. The Ganges River, with its tributaries the Jumna, Gogra, Rapti, and Gandak.
3. The Brahmaputra River, which has no important tributaries.

The Rivers of Peninsular India.—The rivers of Peninsular India are quite different from the rivers of Northern India. They rise in the hills of the plateau, and they are fed only by the monsoon rains. In the Dry Season they often become almost dry—so nearly dry that only the smallest boats can use them. Owing to the general slope of the plateau, the rivers rise near the Western Ghats and flow towards the Bay of Bengal. The most important are the Mahanadi, Godavari, Kistna, and Cauvery.

In the north of the Plateau two important rivers, the Nerbada and the Tapti, both flow westwards.

The Rivers of Burma.—Like the Ganges and Brahmaputra, the rivers of Burma are mighty streams fed partly by mountain snows, and having water all the year round. The rivers flow in the valleys between the mountain ranges. In the heart of Burma is the Irrawaddy and its great tributary the Chindwin. Occupying a deep trench in the Shan Plateau is the Salween.

The Rivers of Baluchistan and Tibet.—Both Baluchistan and Tibet are very dry countries. The rivers only flow after rain, and empty into shallow lakes, which often dry up in the Hot Season. These areas are thus regions of inland drainage.

Importance of the Rivers.—In nearly all respects the rivers of Northern India are more important than those of Peninsular India.

(a) They yield a constant supply of water which can be used for irrigation.

(b) They traverse, in their lower courses, broad, flat plains of fertile alluvium, very suitable for irrigation.

(c) They afford good highways of communication, though they are much less used than formerly.

On the other hand, the rivers of Peninsular India—

(a) Do not yield a constant supply of water.

(b) Have valleys less suitable for irrigation.

(c) Are not navigable for long periods of the year.

Notice also that the rivers of Northern India have a long upper course in the mountains ; the rivers of Peninsular India have not.

Geology and Minerals.—The main features of the geology of India correspond very closely with the physical features. The mountain walls consist mainly of folded sedimentary rocks. The plain of Hindustan consists almost entirely of alluvium, and so do most of the coastal strips, and, of course, the river deltas. In the Ganges Valley the alluvium is many hundreds of feet thick. In the Upper Ganges Valley and the Punjab, the "Older Alluvium," as it is called, contains hard calcareous concretions about the size of nuts known as "kankar." In a country where there is no stone

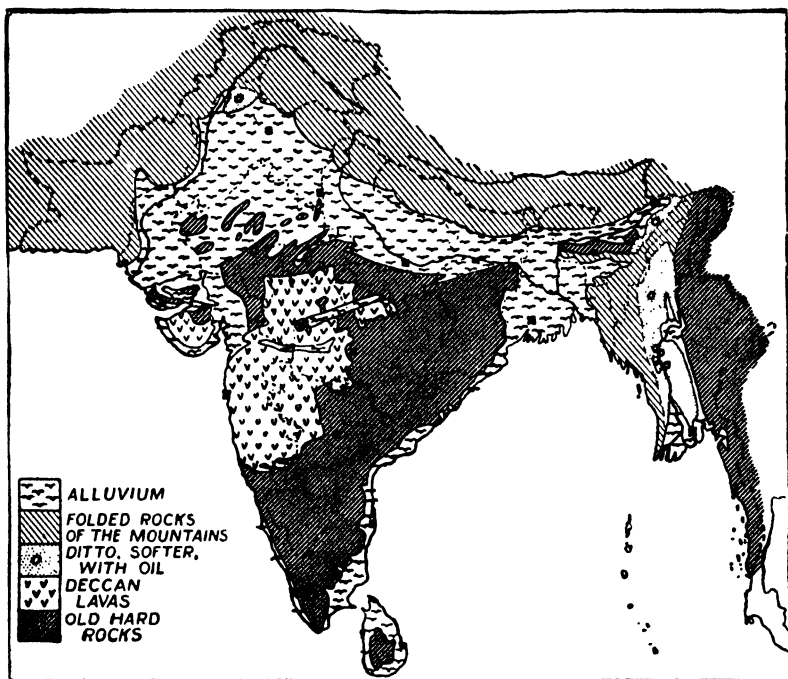


FIG. 16.—Geological map of India.

Note.—The area marked as alluvium in Ceylon is largely a lowland of laterite covering old hard rocks.

even these small nodules have value as road metal. The Indian Plateau consists mainly of very old crystalline rocks. This mass of old rocks was in existence long before the great Himalayan fold mountains were formed; it has for long ages formed a "stable massif" of much-altered and folded rocks. On the edge of the plateau are areas of sedimentary rocks, important because they are coal-bearing. Nine-tenths of the coal of India comes from the Jharia and Raniganj fields, in the north-eastern part of the plateau, but there are also coal-bearing beds in the Godavari Valley and on the northern slopes of the plateau. Nearly the whole of the north-

west of the plateau has been covered by great sheets of lava—the Deccan lavas. This region is one of the largest areas of lava in the world. Many valuable minerals occur associated with the old crystalline rocks. Gold is obtained especially from the Kolar Goldfield. Manganese comes mainly from the Central Provinces, but is also found near Vizagapatam and Mysore. Copper and iron are found in other parts of the plateau, especially in Bihar and Orissa. Mica is mined in Madras, and in the north-east of the plateau.

The island of Ceylon is a detached portion of the Deccan plateau and is famous for its graphite and gem stones.

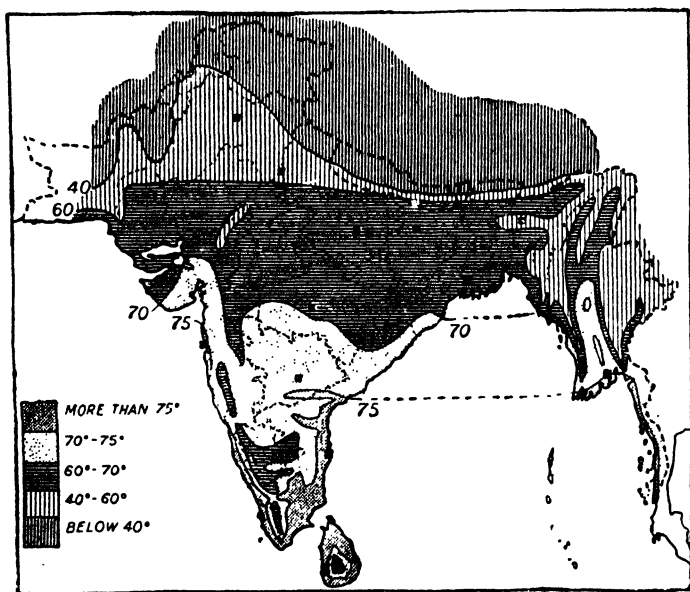


FIG. 17.—Temperature map of India for January.

The Shan Plateau of Burma, with its continuation southwards into Tenasserim, is another region of old hard rocks rich in minerals. One of the largest deposits of the ores of silver and lead in the world is found at Bawdwin; large quantities of tin and wolfram are obtained near Tavoy and Mergui; rubies and other precious stones are found near Mogok.

Mineral oil, or petroleum, is found in young soft rocks, usually on the borders of great fold ranges. Most of the oil of the Indian Empire comes from Burma—from the oil fields of Yenangyaung, Singu, Minbu, Yenangyat, and the Upper Chindwin. Some oil is also obtained in Assam, and a field is now being worked near

Attock, in the Punjab. The following table shows the value of the mineral production of India :

Mineral	Value (£ millions)		Chief localities
	1925	19—	
Coal	9.5		Jharia, Raniganj
Petroleum	7.7		Burma
Manganese ore	2.6		Central Provinces
Gold	1.7		Kolar (Mysore)
Lead	1.2		Bawdwin (Burma)
Mica	0.8		Madras, B. and O.
Silver	0.7		Bawdwin (Burma)
Salt	0.6		Madras, Bombay, Punjab
Iron ore	0.3		Bihar and Orissa
Tin ore	0.3		Burma
Copper	0.3		Burma

Keep the table up to date from the *Statesman's Year Book*.

Climate.—Considering first conditions during the *Cold Season* when the thermal equator lies far to the south of India, there is, as one would expect, a gradual decrease in temperature from south to north—from a January average of 80° at Trivandrum to one of 55° at Lahore. At this season India is under the influence of cool, outblowing land winds—actually the North-East Trades. But the mountain wall protects India from the icy blasts which sweep over China in the winter. The winter is normally the rainless season in India. In the north-west, however, cyclonic rains fall during the winter months in the Punjab and may represent the ultimate eastern extension of the winter rain belt of the Mediterranean Sea. The October-December rainfall of the Madras Coast and Ceylon (Fig. 18) is due to storms coming at the end of the monsoon.

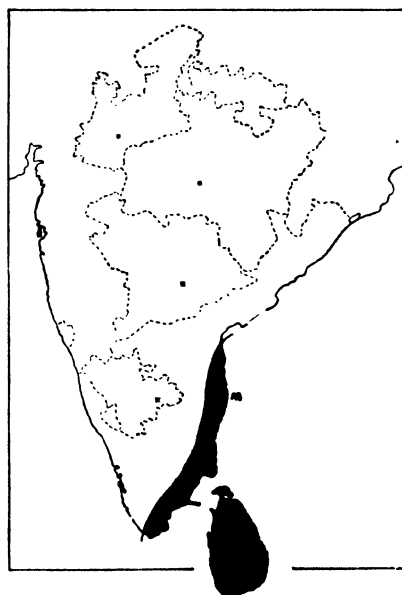


FIG. 18. —Cold season rains in Southern India and Ceylon.

Map showing the part of Peninsular India which has not less than 10 inches of rain in November and December.

In February, March, April, and May the thermal equator moves gradually northwards, and by June and July the centre of great

heat is over the Punjab—at this season one of the hottest areas of the world (Fig. 19). The low-pressure centre thus formed over north-west India results in the monsoon. As shown in Fig. 20 the actual direction of the winds is controlled by the physical features of the country. The monsoon “breaks” at different times in different parts of India; the middle of June may be taken as an average date.

It is customary to distinguish three seasons in India—the Cool Season (dry), from November to January; the Hot Season (dry),

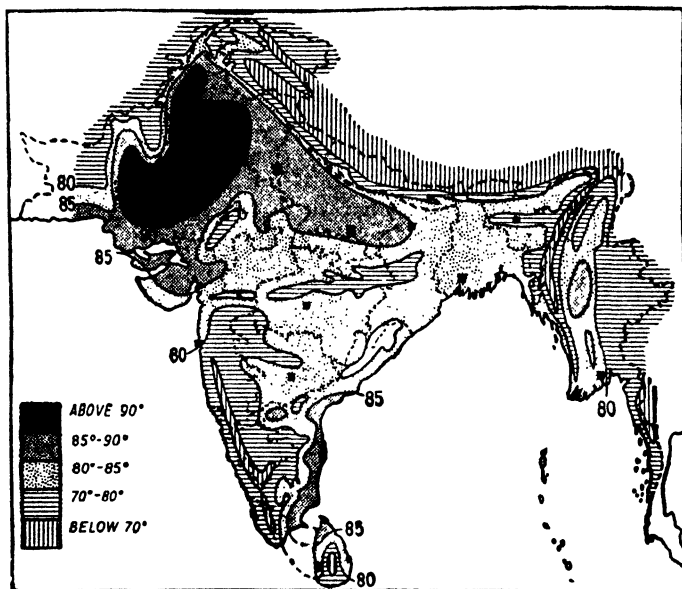


FIG. 19.—Temperature map of India for July.

A small area has been left blank near the east coast. How should it be shaded, and why?

from February to early June; and the Rainy Season, from June to October.

Rainfall and Natural Vegetation.—As stated above, India receives most of its rain from the South-West Monsoon, and hence the rain falls from June to October. Fig. 21 is a simple rainfall map of India and demonstrates the separation of four rainfall-vegetation regions:

(a) Areas with more than 80 inches of rain per year—in the plains rice is everywhere the leading crop, whilst the hills are clothed with evergreen forest of equatorial type.

(b) Areas with between 40 and 80 inches of rain—areas where the deciduous monsoon forests with the valuable teak and sal flourish, the trees losing their leaves in the hot, dry season.

In the plains many crops can be grown without irrigation and there is a mixture of wet-zone and dry-zone crops.

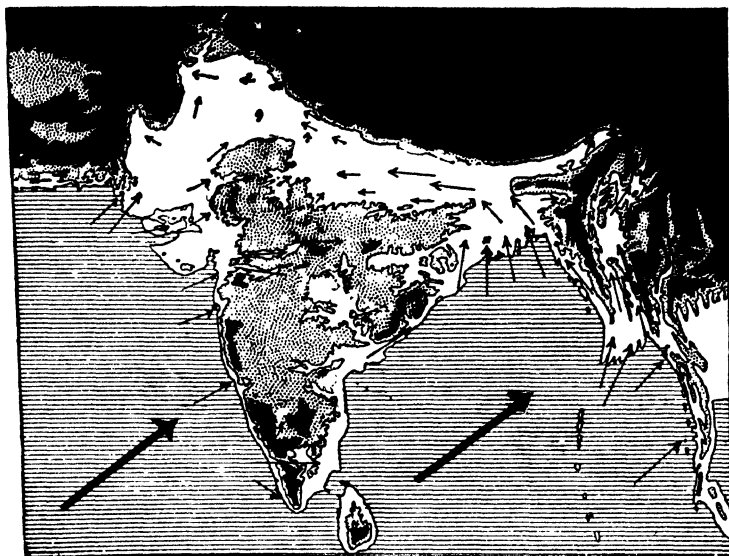


FIG. 20.—Map of India showing monsoon arrows.

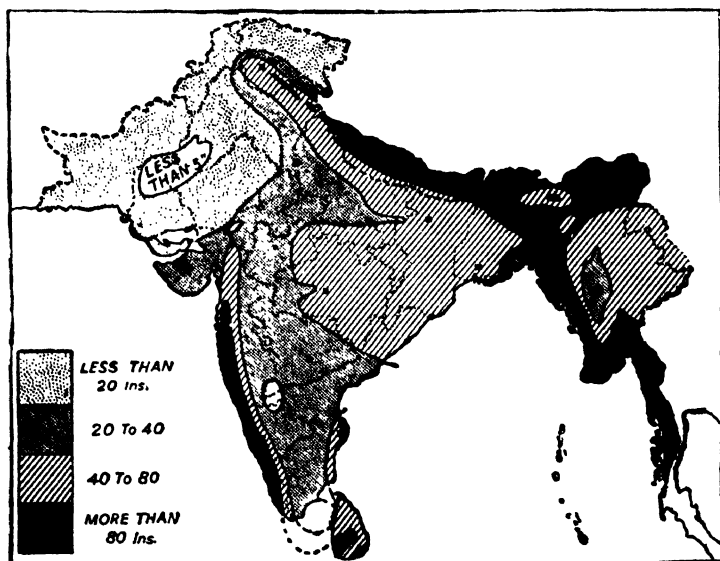


FIG. 21.—Rainfall map of India for the year.

In the centre of Peninsular India a small patch has been left blank. How should it be shaded, and why?

(c) Areas with between 20 and 40 inches of rain, where the natural vegetation is scrub and thorn forest, and where dry-zone crops, such as millets, grow.

(d) Areas with less than 20 inches of rain, forming deserts and semi-deserts and where irrigation is practically essential.

In addition to these four main types of vegetation, the remarkable differences between which are mainly due to variations in rainfall, there are the mountain forests which occur above the frost line (about 5,000 feet in Southern India, 3,000 feet in the Himalayas) which include both broad-leaved evergreen oak forests and coniferous forests. Mangrove swamps grow along those portions of the flat, muddy sea coasts and over the great river deltas which are flooded by the tides—especially round the old mouths of the Ganges where they form the “sundarbans.” Patches of grassland interrupt the monsoon forests on the hills, and much of the open thorn forest has a carpet of grass, but otherwise grassland is not characteristic of India. It must be remembered that India is a very densely populated country and the natural vegetation has been almost entirely removed over such fertile tracts as the alluvial plains of Northern India.

Forests and Forestry.—Nearly a quarter of a million square miles of land—about 15 per cent. of the total area of India—are classed as forests and out of this total over 100,000 square miles are “Reserved Forests,” the exploitation of which is carefully regulated by Government. Over half the forests of the Indian Empire and nearly a third of the Reserved Forests are in the province of Burma. The Central Provinces, the eastern and western slopes of the Western Ghats in Bombay and Madras, and the slopes of the Himalayas are the other important forested areas. The most valuable timber is teak, mainly from Burma; the pyingado or Burma ironwood is largely used for railway sleepers. The sal is a good timber tree of the north-eastern plateau and lower slopes of the Himalayas. The pine forests and the deodars of the Himalayas yield good timber but the forests are difficult of access.

Many of the poorer kinds of wood in all parts of India are used for firewood. The mangrove forests are found in deltas where no other wood is available, and are therefore valuable for fuel.

Bamboo is really a very large grass which grows in many parts of India, but especially in the Monsoon Forests, and has a great variety of uses. Another forest product is lac, a sticky substance produced by insects living in the forest trees.

The method of working the timber of the forests is interesting. It is cut in the dry season and dragged to the small streams by elephants or buffaloes. When the rains come the streams rise, and the logs are floated down to the bigger rivers. These logs are joined together to form “rafts” and floated down the rivers to saw-mills.

Agriculture.—India is essentially an agricultural country. Nine-tenths of the vast population depend on agricultural pursuits for their existence. Despite the population of 320,000,000 there is still a surplus of food grains available for export—wheat from the Punjab, rice from Burma though not from India proper.

The following table shows the relative importance of the chief crops :

Crop	Acreage (millions)		Yield (millions of metric tons)	
	1923-26	19—	1923-26	19—
Rice	80.7		29.7	
Wheat	31.2		9.1	
Millet	44.0		7.8	
Sugar cane	2.7		2.9	
Linseed	3.7		0.5	
Rape and mustard	6.1		1.1	
Sesamum	5.1		0.4	
Ground nuts	3.2		1.5	
Cotton	26.5		1.3	
Jute	2.9		8.5	
Tea	0.7		372.0 ¹	
Coffee	0.14		25.0 ¹	
Rubber	0.13		18.0 ¹	
Indigo	0.14		30 ²	

The total acreage actually sown in British India (*i.e.* India excluding native states) was 227,000,000 acres in 1924-25, out of which 45,300,000 acres were irrigated. Sixty per cent. of the land irrigated is by Government works.

Rice is grown mainly on flat, alluvial land where there is an abundant rainfall. Its distribution is shown in Fig. 22. This should be compared with the rainfall and physical maps. It forms the staple food of the people in the wetter regions of India. In the drier regions it becomes less important, and where the rainfall is less than 40 inches it can only be grown on irrigated land.

Wheat, which forms the principal food grain of most white races, has become the favourite food in the drier parts of Northern India. It is there a winter crop, so that the land can often be used for other purposes during the rest of the year. It is sown at the end of the rains, and ripens at the end of the year before the great heat commences. In normal years a surplus is available for export to Europe *viâ* Karachi. The pre-war export disappeared during the war and post-war years, but has again assumed considerable proportions. Wheat is a very important crop in the Punjab and many of the northern parts of India. It is grown mainly on irrigated land

¹ lbs.

² cwts. of dye (1,000).

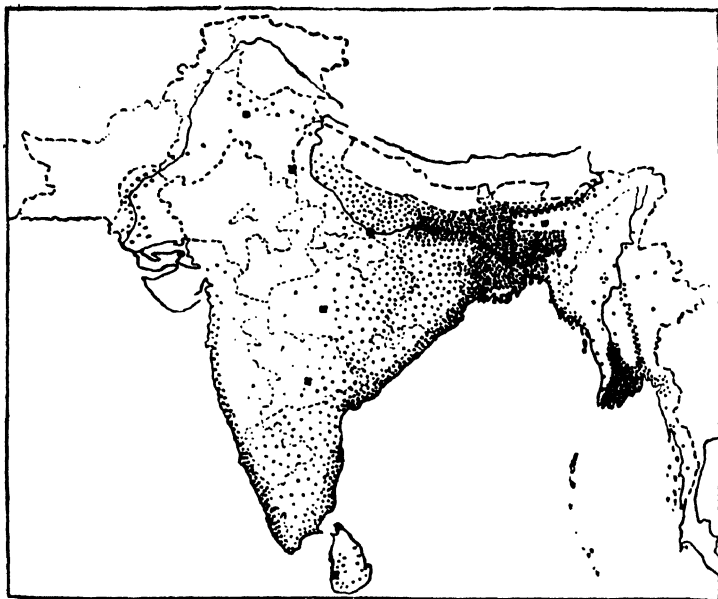


FIG. 22.—The distribution of rice in India.

Each dot represents 50,000 acres. Compare this with the rainfall, physical and geological maps.

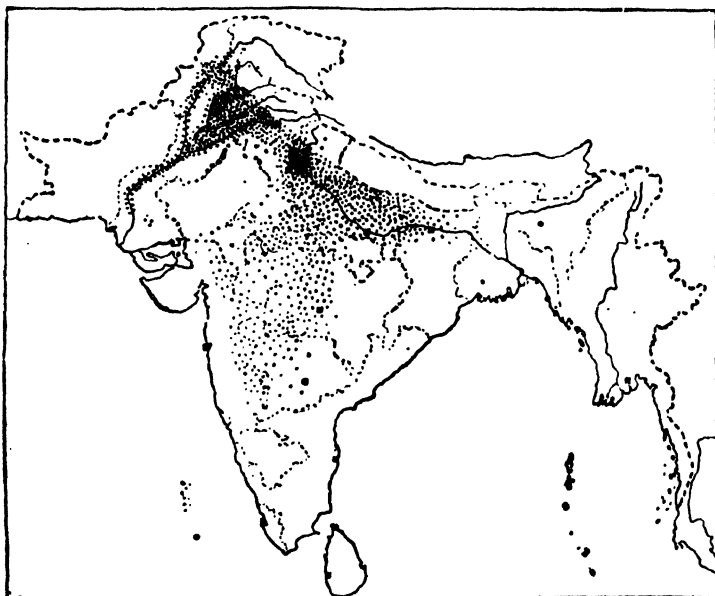


FIG. 23.—The distribution of wheat in India.

where the rainfall is less than 40 inches. As we travel down the Ganges Valley into wetter regions it gradually disappears.

Barley.—Barley is another important crop which grows largely in the same districts as wheat.

Millet forms the "staple" food of the people in most of the drier parts of India. There are several different kinds, the three principal being *cholum* or *jowar*, *cumbu* or *bajra*, and *ragi* or *marua*. Where the rainfall is less than 40 inches millet is everywhere important, and it can be grown without irrigation even when the rainfall is as low as 20 inches. When the rainfall exceeds 40 inches it quickly disappears. Fig. 24 shows the distribution of millet.

Maize flourishes both on the plains and in the hills where the rainfall is moderate. It is grown as a subsidiary food grain and for fodder in many parts of India but only among certain hill tribes is it the chief grain. We find it with millet in dry regions, but also in damper regions too. But in the Lower Ganges Valley with a rainfall of 60 inches it disappears.

Pulses of many different kinds are cultivated throughout the country. The most important is gram, which affords a good food as well as fodder for cattle and horses.

Sugar-cane is grown in nearly all the provinces of India, but most comes from the irrigated lands of the Upper Ganges Valley and the Punjab. From it jaggery (or jagri) the native brown sugar is made. But not nearly enough sugar is produced in India, and enormous quantities are purchased from Java every year.

Cotton is the most important of the crops not grown for food. In India there are two principal kinds :

(a) Native Indian short-stapled cotton.

(b) American upland cotton.

Cotton is a dry-region crop, and flourishes where the rainfall is less than 40 inches. The soil is important; one of the best for native cottons but not for American is the sticky black cotton soil produced by the weathering of the Deccan lavas. The American cottons are grown mainly on irrigated alluvial soil in the Punjab and United Provinces.

Jute is a crop of which India enjoys almost a world monopoly. In India its cultivation is restricted almost entirely to the very wet lands of the Ganges Delta.

Oilseeds.—Plants grown for the sake of the oil obtained from their seeds include linseed, rape, mustard, sesamum, and ground-nuts. They grow best with a light or medium rainfall, and often prefer slightly hilly country. Ground-nuts, in particular, favour light sandy soils of little use for other crops. A good proportion of the crop is grown for export.

Coconuts grow best in wet regions along the coast and are grown

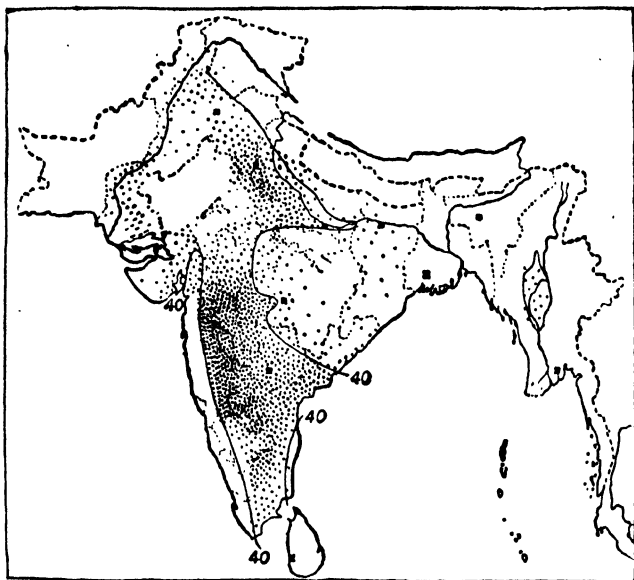


FIG. 24.—The distribution of millet in India.
Each dot represents 50,000 acres. Notice that nearly all the millet grows where the rainfall is less than 40 inches.

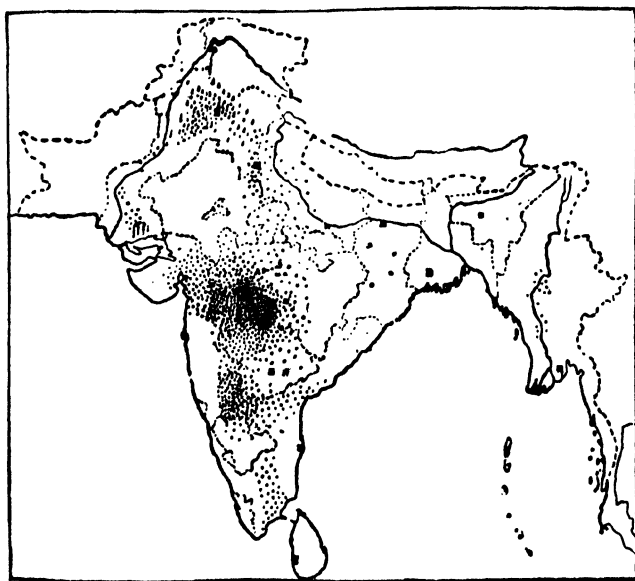


FIG. 25.—The distribution of cotton in India.
Each dot represents 20,000 acres.

down the west coast, in the island of Ceylon, in the Nicobar and other islands of the Indian Ocean, and on parts of the east coast.

Tea.—The tea-plant is a shrub which requires a heavy rainfall, but must be grown on hill slopes or where the water does not remain near the roots. Most of the tea is grown for export. The hill slopes bordering the Brahmaputra Valley in Assam, the Himalayan slopes near Darjeeling and Dehra Dun, the island of Ceylon, and the slopes of the Nilgiri Hills are the chief centres. Tea is obtained from the dried leaves of the shrub.

Coffee was once important in several districts in Southern India as well as in Ceylon. Disease ruined the industry and foreign competition, mainly South American, has prevented a resuscitation of the industry, except in Mysore.

Tobacco.—Soil is often more important for tobacco than rainfall, and a little is grown in most districts of India. In some places, like the delta of the Irrawaddy, enough is grown to be exported.

Rubber.—There are numerous rubber plantations in Ceylon, and some in Lower Burma and Travancore.

Indigo is a small plant from which a purple dye is made. It used to be important in the Ganges Valley, but the advent of cheap coal-tar dyes practically killed the industry, and the growing of indigo is not nearly so important as it was.

Opium is obtained from the seed-capsules of the opium poppy, and large quantities used to be sold to China. The Indian Government, for the benefit of humanity, has suppressed this lucrative trade, and only a little for medicinal purposes is now grown and exported.

Animals.—The numbers of animals in British India (excluding native states) without Baluchistan are :

	Millions	
	1924-25	19—
Oxen	120·3	
Buffaloes	30·6	
Sheep	23·2	
Goats	39·2	
Horses and ponies	1·7	
Mules	0·07	
Donkeys	1·4	
Camels	0·5	

Animals play an extraordinarily important part in the life of an agricultural country such as India. Oxen and buffaloes are used almost exclusively for ploughing and, except in the towns, are the principal draught animals. The horses and ponies are numerous

in the towns ; ponies and donkeys are much used in hilly regions ; camels and donkeys in the drier areas. An important animal not mentioned in the list above is the *elephant*, used especially in timber working and as a beast of burden in forested country. Large numbers of wild elephants still live in the less accessible parts of the monsoon forests and every year many are caught and trained, especially in Burma. They are driven into a strong wooden enclosure called a keddah. The keddah is very narrow and the elephant cannot turn round and so charges the end till tired out. The beast is then chained to a tame elephant for training purposes. Contrary to the usual belief, the elephant is a very delicate animal and requires careful attention.

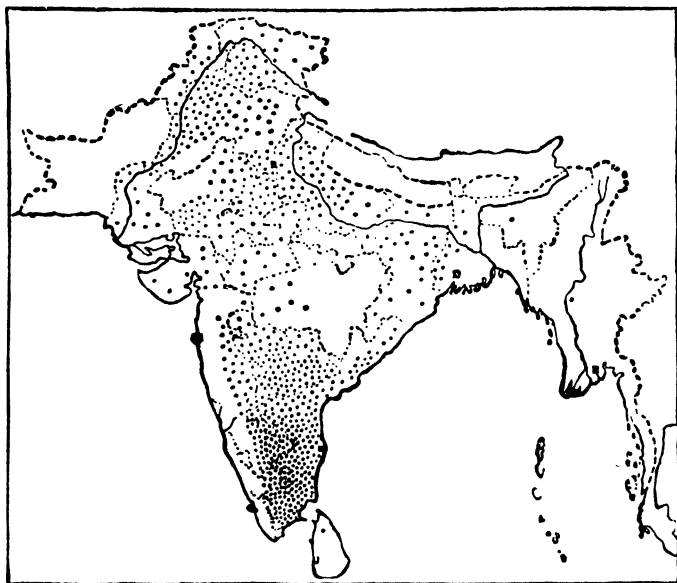


FIG. 26.—The distribution of sheep in India.

Each dot represents 50,000 sheep.

Oxen.—The enormous numbers of oxen in India—in the whole Indian Empire there are probably 160,000,000 or one for every two inhabitants—are the outcome of their use in ploughing. A pair of bullocks is the vital possession of every farmer working on his own, and in some parts of India the necessary qualification of a bridegroom—the argument being that without them he could not support himself and his bride. The cow is a sacred animal to the Hindus and so is not used as food and, moreover, the animals are allowed extraordinary liberty in wandering about—and incidentally polluting—villages, towns, and private dwellings. The manure when dried supplies fuel, but the Indian has not learnt to make full use of the

animals. The milk is often untouched; of the carcase the hide is often the most valuable part. Dairying has been established only in a few scattered areas, mainly in the United Provinces. In many of the drier parts of India there is not sufficient grass to feed the oxen, so fodder has to be grown for them.

Buffaloes.—There are 28,000,000 buffaloes in India. The buffalo is heavier and stronger than the ox, but slower. Although the buffalo is very fond of the water, whence the name "water buffalo," and is much used in the rice fields of Lower Burma for ploughing, we also find large numbers in the drier parts of India, as in the United Provinces.

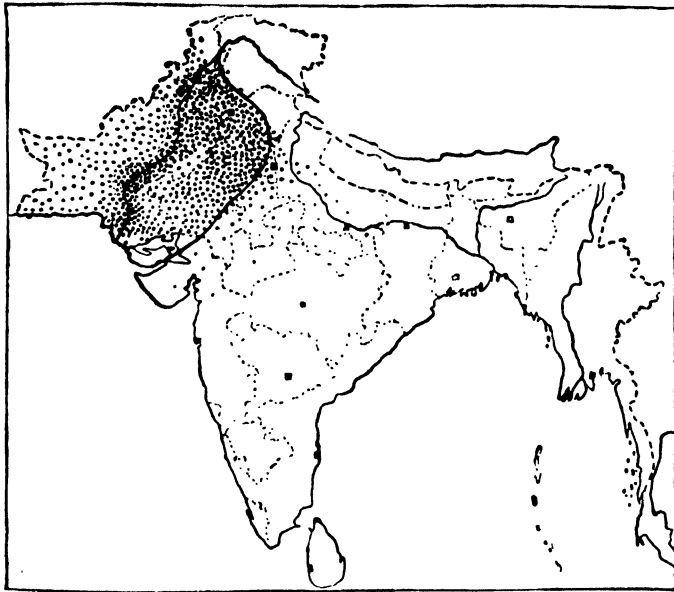


FIG. 27.—The distribution of camels in India.

Each dot represents 1,000 camels. The line marked is the 20-inch rainfall line. Notice how nearly all the camels live where the rainfall is less than 20 inches a year.

Sheep.—There are 22,000,000 sheep in British India, mainly in the dry hilly parts, where they can live on grassland or waste land which is not good enough for cattle. They are most abundant in Madras. Compared with the sheep of other parts of the world, those of India are very poor and yield neither good wool nor good meat.

Goats.—Goats are to be found everywhere in India, for they are very easy to keep. They can live on the poorest of grass or shrubs, and find enough to eat even in the driest parts.

Horses and Ponies.—There are less than two million horses and

ponies in India, which shows that horses are not used for ploughing as they are in other countries of the world.

Camels.—The distribution of camels in India affords an interesting example of climatic control—very evident from Fig. 27.

Irrigation in India.—In times past India has suffered terribly from famine. The “famine areas” are for the most part those with a moderate rainfall, where in normal years the rainfall is quite sufficient to produce excellent harvests of “dry” crops—crops grown without permanent irrigation. The drier parts of the plateau suffer most from years of deficient rainfall, and in the old days many thousands of people perished. The advent of railways and efficient

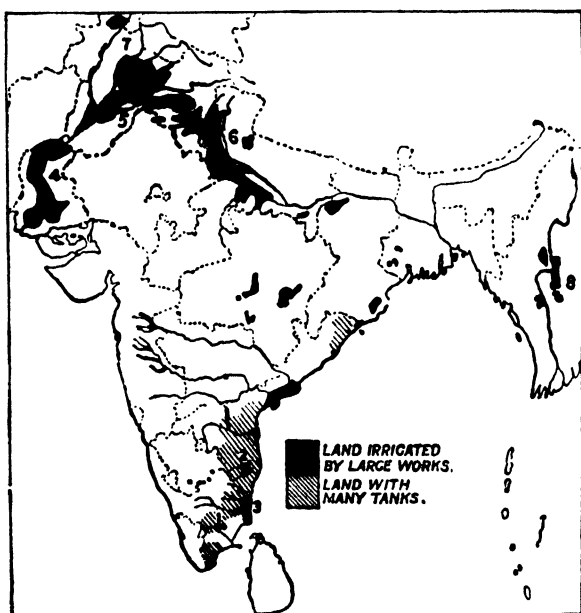


FIG. 28.—Irrigation in India.

organization in the despatch of supplies to the threatened area have rendered decimation by starvation almost a thing of the past. It is to be noted that famine is not to be feared so much in the *driest* parts where there are permanent irrigation works, but in regions of intermediate rainfall. The huge area of India irrigated has already been noted—ten times the total area of cultivated land in the most famous of all irrigated countries, Egypt.

Perennial Canal Irrigation is by far the most important type. The British Government has spent £75,000,000 on irrigation works in India, mainly in the drier parts of the great Plain—in the Punjab, United Provinces, and Sind. Although the rainfall in these parts

of the plain is poor, there is a never-failing supply of water in the rain-fed and snow-fed rivers from the Himalayas. Irrigation has transformed the Punjab into one of the leading provinces of India. It has been said, with but mild exaggeration, that "India adds an Egypt to its area every year, yet the world takes but little notice." There are also important systems in Madras and Central Burma.

Inundation Canals fed by the river during flood season, have been very important in the past especially in Sind, but they are being replaced by permanent canals. They have the double disadvantage that just in those seasons when water is most needed they are liable to be but partly filled; they cannot take full advantage of the river supplies, and dry up in the Hot Season.

Tanks.—In most of the drier parts of Peninsular India mud walls are built across the valleys of small streams, so that water collects and forms a pond or lake during the wet season. Such ponds or lakes are called tanks. When the rainy season is over, the water from the tanks can be used, but in the hot season the tanks dry up completely. In bad rainfall years the tanks may not even be filled during the rains.

Wells.—Although the surface of the land may be dry in the drier regions, there is often water at a short distance below the surface. This water can be reached by wells and brought up to the surface. In the north-eastern parts of the United Provinces, not yet served by canals, wells are very important.

Karez.—In Baluchistan, but in no other part of India, there is a very clever system of irrigation. The rainfall on the hills is greater than on the plains, and when the little streams from the hills reach the plains, the water sinks into the ground. Long underground tunnels called karez have been constructed to reach this water at the foot of the hills and to bring it out on to the alluvial plains.

The Political Divisions of India.—The Indian Empire is ruled by the Government of India, at the head of which is the Viceroy or Governor-General. The Viceroy is assisted by a small council, so that the acts of the Government of India are always said to be by order of "The Governor-General in Council." The Viceroy and Council are advised in all matters, but especially in the making of laws, by the Legislative Assembly, a large body of men mainly elected by the people themselves in all parts of the country. Although the Government of India with its Council and Legislative Assembly is the real means of Government in India, many matters have to be referred to London, where they are administered by the Secretary of State for India. When the possessions of the East India Company were taken over and the Government of India was formed, the proclamation declared that "all shall alike enjoy the equal and impartial protection of the law" whatever their race or religion, and that all offices in the Government should be open to

all natives of India, whatever their race or creed. Education, ability, and integrity are the only qualifications required for Government service.

Since 1912 the seat of Government or Capital of India has been Delhi. For many years before that it was at Calcutta, which remains the "commercial capital" of the country.

The fundamental division of India is into "British India" under the direct control of the Government of India, and the Native States. Many, in fact most, of the statistics published refer to British India, and this point should be carefully noted. British India has a total area of nearly 1,100,000 square miles, and a popula-

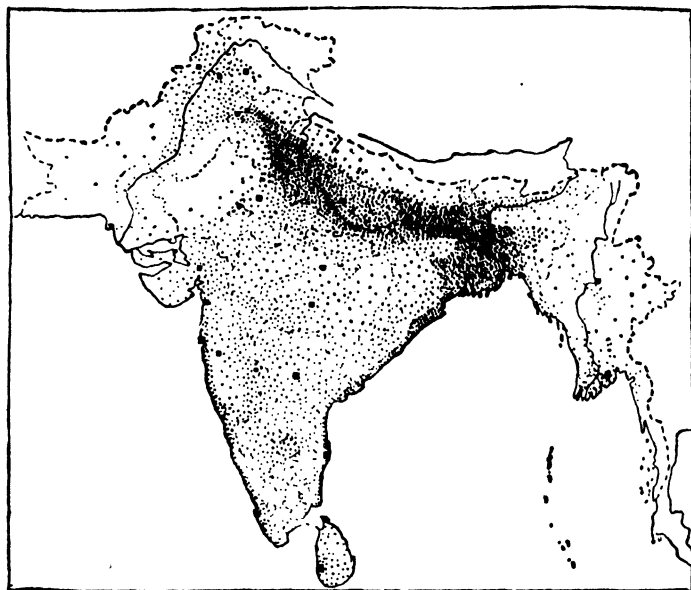


FIG. 29.—The population of India.

Each dot represents 100,000 people. Each square dot represents a town with more than 100,000 people.

tion (1921 census) of 247,000,000; the Native States cover over 700,000 square miles and have a population of 72,000,000.

British India has been divided into nine major and six minor provinces. The nine major provinces of Madras, Bombay, Bengal, the United Provinces, the Punjab, Burma, Bihar and Orissa, Assam, and the Central Provinces are ruled each by a Governor assisted by a Legislative Council (elected mainly by the people); the six minor provinces are each administered by a Chief Commissioner. The six minor provinces are the North-West Frontier, Ajmer, Delhi, Coorg, Baluchistan, and the Andaman Islands.

The Native States are ruled by their own chiefs, styled

Maharajahs, Rajahs, etc. Generally the ruler is advised by a political officer appointed by the Government of India, but the native ruler otherwise has complete control of his affairs. Some of the Native States are very large (like Hyderabad or Mysore) others embrace only a few square miles. The smaller Native States have political relationships with the provinces within which they lie, but the larger States (Kashmir, Hyderabad, Mysore, etc.) deal directly with the seat of Government at Delhi.

Included geographically in India are certain entirely independent States like Nepal. Ceylon is entirely separate from India in matters of Government.

The following table gives the area and population of the leading provinces and states only :

Provinces	Area square miles	Population	
		1921	19—
Assam	53,000	7,600,000	
Baluchistan	54,000	420,000	
Bengal	77,000	47,000,000	
Bihar and Orissa	83,000	34,000,000	
Bombay Presidency	124,000	19,500,000	
Burma	234,000	13,200,000	
Central Provinces	100,000	14,000,000	
Madras	142,000	42,000,000	
N.-W.F.P.	13,400	2,250,000	
Punjab	100,000	21,000,000	
United Provinces	107,000	45,000,000	
States			
Baluchistan States	80,000	400,000	
Baroda	8,100	2,130,000	
Bihar and Orissa States	29,000	4,000,000	
Bombay States	63,500	7,400,000	
Central India	51,500	6,000,000	
Central Provinces States	31,000	2,000,000	
Gwalior	26,400	3,200,000	
Hyderabad	83,000	12,500,000	
Kashmir	84,000	3,300,000	
Madras States	10,700	5,500,000	
Mysore	29,500	6,000,000	
N.-W.F.P. States	25,500	2,800,000	
Punjab States	37,000	4,400,000	
Rajputana	129,000	10,000,000	
Sikkim	2,800	82,000	
U.P. States	6,000	1,130,000	

Population.—In the whole of India, including Burma, there are 320,000,000 (three hundred and twenty million) people.

Fig. 29 is a population map of India on which each dot represents 100,000 people. By comparing this map with the physical,

geological, and rainfall maps we find that the population is densest :

- (1) In the lowlands or slightly hilly regions ;
- (2) On the tracts of alluvium ;
- (3) In both dry and wet districts.

Compared with its size there are very few large towns in India. The population is mainly "rural." India is an agricultural country ; the population is densest where agriculture is most important.

The Races of People in India.—The distribution of the different races of people in India is a result of the complicated history of the country. The original inhabitants are believed to be the "Pre-Dravidians." Then India was invaded by the Dravidians, who spread all over the country and drove the aborigines away to the hills and thick forests. There are scarcely any descendants of the Pre-Dravidians left now ; the best example is the Veddas, who live in the forests in the wildest parts of Ceylon. After the Dravidians, India was invaded again and again from the north-west by clever, cultured, and educated peoples. The invaders—we may call them all together the Indo-Europeans or Indo-Aryan peoples—took possession of all the best lands, such as the fertile plain of Hindustan, and drove the Dravidians into Peninsular India, south of the Satpura line. The Satpura range of mountains formed one of the great barriers which prevented the spread of the invaders to the south. Wave after wave of different races poured into India and settled there, often intermarrying with the people they conquered, so that to-day the peoples of India are all very mixed, and it is often difficult to say whether they have descended from the Dravidians or the later invaders. It is much easier to classify the peoples according to the language they speak, or according to their religion. Just as India was invaded again and again from the north-west, so Burma was invaded again and again from the north. But the people who poured into Burma were quite different from those who went to India. Burma was invaded by Mongol peoples—that is, people like the Chinese with yellowish or yellowish-brown skin, smooth broad faces, and straight black hair. Nearly all the people living in Burma are Mongols. As in India, the wilder peoples were driven away to the hills, and one of the latest and cleverest invaders (the Burmans) seized the most fertile lands of the river valleys.

The Languages of India.—The large number of languages spoken in India is also a result of the history of the country. In northern India, Hindustani, and in Southern India, Tamil, are the two native languages most widely used or understood, though English is the commercial language understood by educated Indians throughout the country. It must be remembered that most of the

lower classes—indeed no less than 93 per cent. of the total population—are illiterate, unable to read and write any language.

Religion.—More important than race, or even language, is religion. In India the lives of the people are often entirely controlled by religion. It determines their upbringing, education, customs, and habits, marriage, occupation, dwelling-place, type of home, and the architecture of their towns. One or two examples may be of interest. To the Hindu the cow is a sacred animal; the animals are not killed even if useless, and numbers of sacred bulls do no work; the Hindus will not eat beef. To the Mahommedans the pig is an unclean animal, and they will not eat pork. It is forbidden for a Buddhist to take life, and he will not kill an animal for food. Early marriage is the custom among certain Hindus, and nearly all the girls are married before they are ten years old in certain parts of India. The strict observance of the “purdah” system, whereby a woman may not be seen by men other than her husband, has resulted in types of huts and walled yards which simplify this observance; in some parts the huts are scattered amongst the fields instead of being collected into villages.

We find in India that there are “religious centres”—famous places of pilgrimage or seats of learning connected with one of the religions. Thus Benares with its thousands of Hindu temples and its Hindu colleges is a centre of both the Hindu religion and the culture connected with it. Lahore is a great centre of Mahommedanism, whilst Rangoon and Mandalay in Burma and Kandy in Ceylon are centres of Buddhism. To the Hindus the River Ganges is the most sacred river in the world; to die or to be cremated on its banks is to gain everlasting peace. Hardwar, where the Ganges leaves the mountains, is one of the most sacred places of pilgrimage.

The two greatest religions of all—Hinduism, which may be called the national religion of India, and Mahommedanism—are widely distributed. Mahommedanism came to India with the later invaders from the north-west, and so we find it predominates in Baluchistan, North-West Frontier, Kashmir, and the Punjab. There is another strong centre of Mahommedanism in Bengal. Hinduism predominates in other parts of India. Christianity was brought by seafaring peoples, and is strongest near the coasts.

Manufactures.—Although India has always been an agricultural country, it has also been noted for the cleverness and skill of its people in handicrafts—making cloth and silk fabrics, working in metal, ivory and wood. But machine-made articles can be produced so much more cheaply than hand-made articles, and India is fast taking her place in the world as a manufacturing country as well as an agricultural country. We can still distinguish :

- (a) The old native industries of hand-made articles.
- (b) The newer factory industries of machine-made articles.

Cotton Goods.—The most important native industry has always been the weaving of cotton fabrics. Cotton is one of the native plants of India, and though enormous quantities are produced for export nearly half is used in the country. In some parts of India and Burma every house has its handloom where the women make saris for themselves or dhotis for their husbands. More important now are the great cotton factories. The most important cotton manufacturing centre is Bombay, where a quarter of a million people are employed in the cotton-mills. There are also mills in the Madras Presidency and in the Central Provinces. For the manufacture of cotton goods a certain amount of moisture in the air is required. Bombay has this right amount of moisture, Karachi has not. So that, although Bombay and Karachi are both ports exporting raw cotton, only Bombay has in addition cotton-mills.

AGRICULTURAL	INDUSTRY	TRADE	OTHERS
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FIG. 30.—Occupations in India.

Jute.—Just as Bombay is the centre of the cotton manufacturing industries, so Calcutta is the centre of the jute-mills, the raw material being produced in the Ganges Delta. A large quantity of jute is exported raw, but the mills round Calcutta and up the River Hooghly make large quantities of jute canvas and “gunny bags” or grain sacks.

Silk.—India has long been famous for its beautiful silks, and many of the fine old towns are still noted for special kinds. But the industry is very small when compared with cotton or jute. Much of the raw silk is imported from China, but native Indian silk is also produced. Bengal is the chief silk-producing province. Brocaded silk goods are made in Bengal, the Punjab, and Southern India; striped silks and the famous gold brocades all over Northern India at such centres as Agra, Benares, Amritsar, Ahmadabad, and Surat. Burmese silk, made near Mandalay, is quite different but is very good.

Woollen Goods.—India has also long been celebrated for woollen goods, especially carpets and shawls. The weaving of shawls is a typical industry of Kashmir. Carpet-making is carried on in many parts of India, but especially in the Punjab, Kashmir, and the Central Provinces. Coarse blankets are made in many parts of Northern India, where the winters are cold.

In the cotton, silk, and woollen industries native vegetable dyes such as indigo were formerly used, but now cheap artificial dyes are imported.

Metal Working.—Ironworking is another old industry of India, but the great Tata iron and steel works are the only large modern ironworks. Many castes in India use brass for all cooking utensils, and brass-working is an important industry in many towns of Northern India, such as Benares. Bombay and Poona are centres of silver-working; Jaipur and Delhi of gold-working.

Pottery.—The making of pottery for domestic purposes is a native or “cottage” industry all over India. Bricks and tiles are made all over Northern India.

Other Manufactures.—There are numerous rice-mills in Burma; wheat-flour mills in the Punjab; saw-mills in Assam and Burma; oil refineries in Burma, Assam, and the Punjab; tobacco factories in Madras, Burma, etc., as well as sugar-mills in various parts. In Southern India the rubber industry is important, and in Assam tea-packing.

The Cities and Towns of India.—Although nine persons out of every ten live in small villages or isolated huts, with a vast population of 320,000,000 people, there must be a number of large towns. We may distinguish:—

(a) The five great ports—Calcutta, Bombay, Karachi, Rangoon, and Madras.

(b) The famous old cities of the past, many of them founded thousands of years ago, and full of fine old buildings. Some, like the great capital of India, Delhi, are still flourishing; others are becoming smaller.

(c) Cities of modern growth, depending usually on manufactures or the presence of railways.

The Great Ports.—*Bombay* has a fine large natural harbour. Being built on an island there is great congestion in the town, for there is little room for expansion. Notice the gaps in the hills through which the railways from Bombay pass inland to its fertile hinterland. It is from the plateau region behind that Bombay gets most of the raw cotton for its numerous cotton-mills.

Calcutta is the largest city in India, and the second largest (after London) in the British Empire. A hundred years ago the site of Calcutta was an unhealthy swamp; it has grown to greatness by the labour of man and under the activities of the Government of India. Although 70 miles from the sea on the River Hooghly, it can be reached by large ocean steamers, and it is well situated to receive the products of a vast hinterland—the whole of the Ganges Valley. On the opposite side of the River Hooghly is Howrah, which really forms part of Calcutta, and which is connected by rail with nearly all parts of India.

Karachi is the third port of India. Although it has not a very good harbour (it is protected by a breakwater), it is the natural

outlet of the Punjab and is rapidly growing. Notice the railways from Karachi. It is the great wheat port of India, exporting the wheat of the Punjab and also large quantities of cotton. The climate is too dry for the establishment of cotton-mills such as exist at Bombay.

Rangoon is the capital and leading port of Burma. It is well situated 20 miles from the sea, between the Irrawaddy and Sittang rivers, and receives the products of nearly the whole country. The

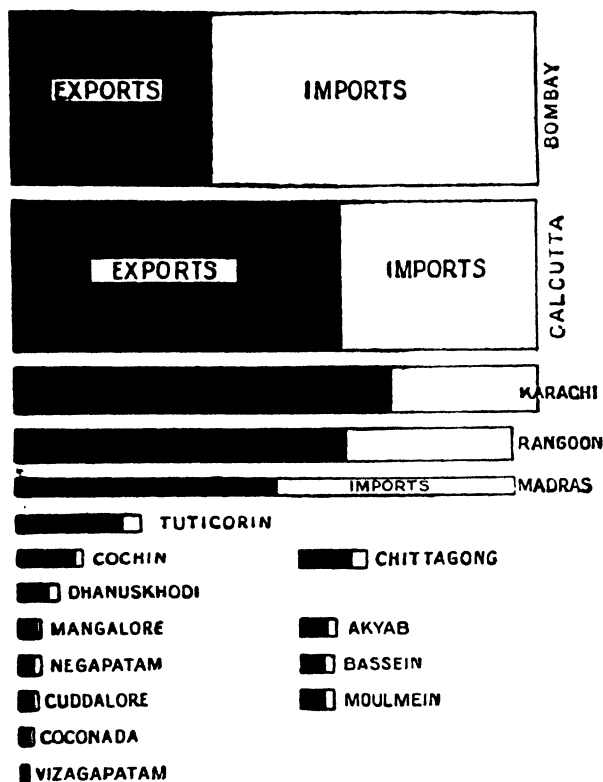


FIG. 31.—Trade of the principal ports of India (1924).

principal exports are rice (grown in the Irrawaddy Delta), petroleum (brought by pipe line from the oil fields), teak wood, and raw cotton.

Madras has the only good harbour on the east coast—it is entirely artificial. Madras is the third largest city and the fifth most important port in India. As a port its trade is a long way behind that of Karachi and Rangoon. There are cotton-mills in Madras, and both cotton goods and raw cotton are exported. The tanning of hides and export of leather also belong to Madras.

Inland Cities and Towns.—*Delhi*, the capital of India, lies

between the Punjab Plain and the Ganges Plain. The district around has been constituted a small province, separate from the Punjab and the United Provinces. Delhi is a large city of 300,000 inhabitants; it owes its importance largely to its position. From Delhi any place in the plain, either of the Ganges or Indus, is easily reached. In days gone by, when India was invaded from the north-west, the invaders had to pass near Delhi, because they were shut in by the Himalaya Mountains on the north and the desert on the south. In the old days the land routes of the north-west joined the water routes down the Jumna and Ganges. In modern days Delhi has become a railway centre. The cotton of the surrounding irrigated lands finds its way to the cotton-mills of Delhi. At a

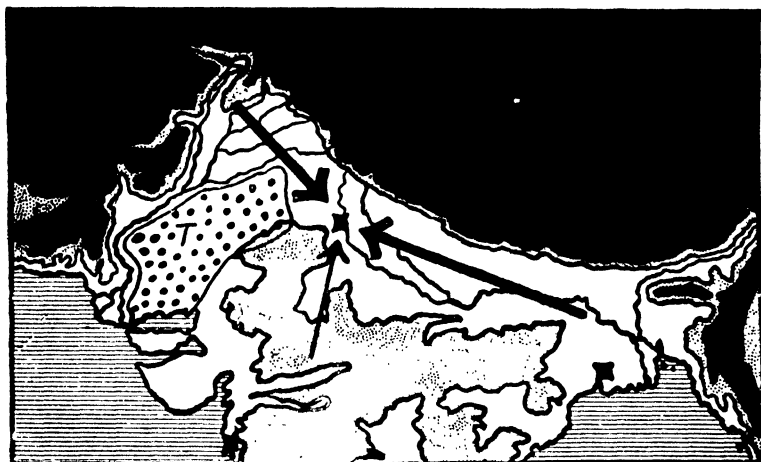


FIG. 32.—The position of Delhi.

T = the Thar Desert. Land over 1,000 feet, dotted; land over 3,000 feet, black.

convenient distance to the north are the healthy heights of the Himalayas, on a spur of which Simla has been built.

Starting from Delhi, we will review the more important places as one goes down the broad Ganges Valley towards Calcutta. On the river Jumna lies Agra, formerly one of the great cities of the Mogul Empire and famous for the Taj Mahal, perhaps the finest work of art in India. In the Ganges-Jumna Doab lie collecting and distributing centres, amongst which Aligarh is noteworthy as having a dairying industry. Cawnpore, on the Ganges, has become a railway centre and has developed modern factories. Lucknow has long been famous for its gold and silver ware. Allahabad, on the confluence of the Ganges and Jumna, is the provincial capital, a place of pilgrimage, a railway junction, and manufacturing town. Benares is the old seat of learning and the most sacred city of the

Hindus. Lying in Bihar and Orissa is Patna, which has given its name to a certain excellent quality rice. In Bengal there are now several large jute-mill towns on the Hooghly, north of Calcutta. On the border of Bengal and Bihar and Orissa are the coal-field centres such as Asansol. In the east of Bengal is the old city of Dacca, which is again flourishing. On the healthy heights of the Himalayas to the north of Bengal lies the hill station of Darjeeling.

Returning now to Delhi and going westwards into the Punjab,

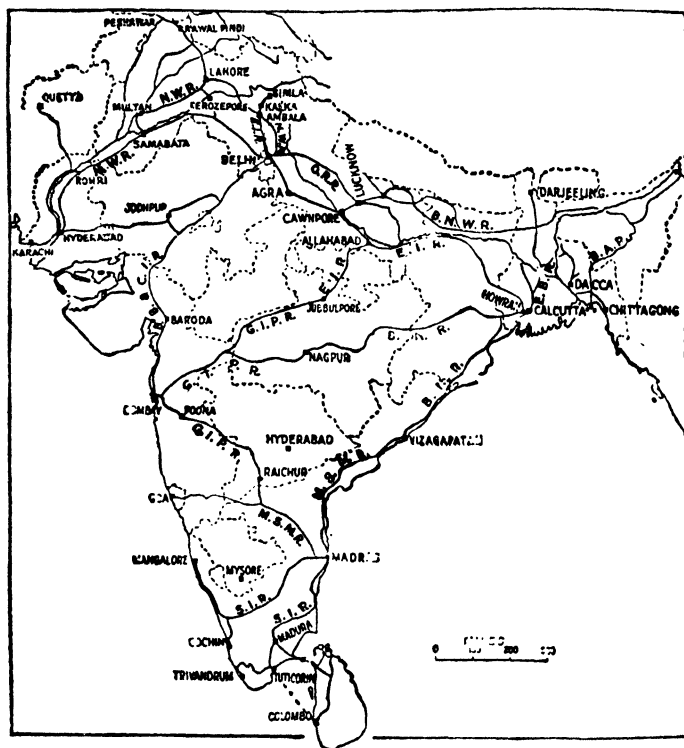


FIG. 33.—Railway map of India.

we find Lahore, the capital, is a flourishing city; but Amritsar is getting smaller. Rawalpindi guards the main route into Kashmir to the town of Srinagar. Peshawar guards the Khyber Pass route and is the centre of the irrigated Vale of Peshawar and principal city of the North-West Frontier Province. Multan is the central town for the very dry south-west Punjab. The fortress of Quetta guards the Bolan Pass.

In Peninsular India, Jubbulpore and Nagpur are two important centres, both with cotton-mills. Farther south, Hyderabad is the

chief town of the state of that name. Bangalore and Mysore are the chief towns of Mysore. In Madras, Ootacamund is the hill station for southern India. Trichinopoly and Madura are two old cities. Cochin on the west coast, and Vizagapatam on the east, are both being provided with harbours at great cost.

Passing to Burma we note the position of the old capital of Mandalay in the heart of the country. Yenangyaung is the modern oil-field centre, Bassein the rice port of the western delta.

The Communications of India.—*Railways.*—By far the most important means of communication in India is the railway. India has now 38,000 miles of railway. There are two principal gauges :—

(a) The broad gauge, 5 feet 6 inches, including all the more important lines and more than half the railways of India.

(b) The metre gauge, 3 feet 3 $\frac{3}{8}$ inches, used mainly, but by no means entirely, for branch lines.

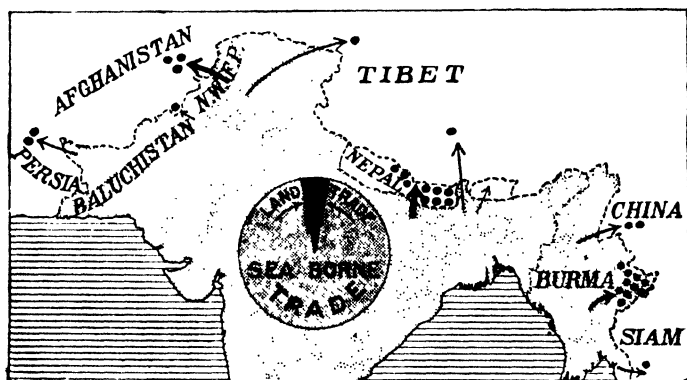


FIG. 34.—The overland trade of India.

Each dot represents trade to the value of roughly one crore of rupees.

Some of the hill railways are on a still smaller gauge. Most of the important railways of India run from the chief ports to different parts of their hinterlands, and it is simplest to study the railways by taking each of the great ports in turn. Follow these on the map, Fig. 33.

There are four main railways radiating from Calcutta and Howrah; four main lines radiate from Bombay; Karachi really has only one railway, which runs to Hyderabad. From Hyderabad there are two main lines, one to Delhi, the other up the Indus Valley to the Punjab. Four main lines radiate from Madras.

Apart from these main lines, shown on Fig. 33, there are large numbers of branch lines in all the more thickly populated parts of India. There is at present no railway connecting India and Burma,

and no railway connecting India with any other country except just over the border into Persia.

Roads.—When compared with other civilized countries, India has very few metalled roads. There are a few “trunk roads,”

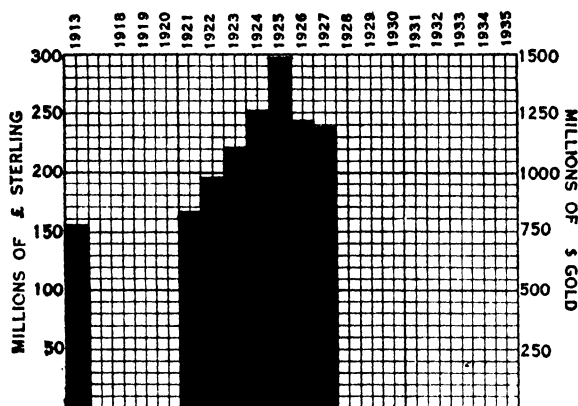


FIG. 35.—The exports of India—merchandise, bullion, and specie.

The apparent rise and fall in the trade is largely due to exchange variations, since conversion into sterling has been made at the average rate for the year. The rupee is now standardized at 1s. 6d. The trade, expressed in crores of rupees (1 crore = 10 million), is as follows :

1913	254 crores.	1924	389 crores.
1921	265 "	1925	410 "
1922	299 "	1926	323 "
1923	346 "	1927	318.5 "

These figures are for calendar years, not the Indian financial year.

such as the one from Calcutta to Peshawar, which were commenced before the days of railways, but often even the trunk roads are badly in need of repair. Most of the metalled roads of India are found round the larger towns, or acting as “feeders” to the railways.

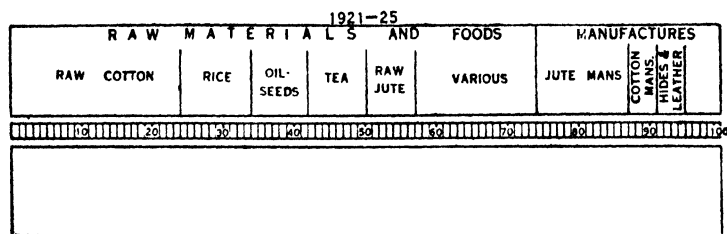


FIG. 36.—The exports of India.

Rivers.—The rivers are much less important than formerly, owing to the growth of the railways and the use of river water for irrigation. The largest system of river transport is found on the Irrawaddy, in Burma, and on the River Ganges and branches below

Patna. Except for the Calcutta and Eastern Canals, the canals of India are little used for transport; they are for irrigation.

The Foreign Trade of India.—Owing to the mountain wall which forms the landward frontier of India, most of her foreign trade is sea-borne. Fig. 34 shows the direction of the small land

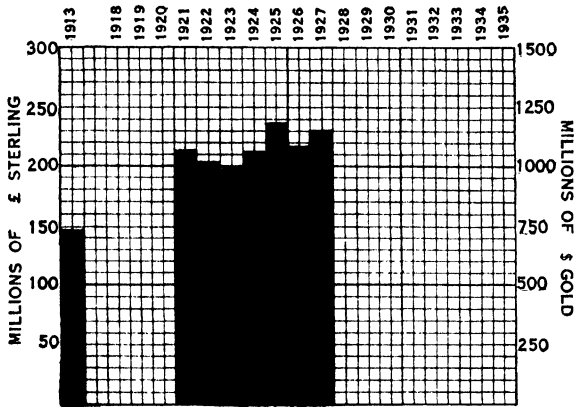


FIG. 37.—The imports of India (including gold and silver).

Expressed in crores of rupees (a crore = 10,000,000).

1913	238 crores.	1924	318 crores.
1921	320	1925	319
1922	305	1926	289
1923	209	1927	308

trade. Although India has a large foreign trade—the exports were nearly £300,000,000 in 1925–26, and the imports £180,000,000—the trade is small when compared with the vast population of 320,000,000. Figs. 36 and 38 show the principal items of import

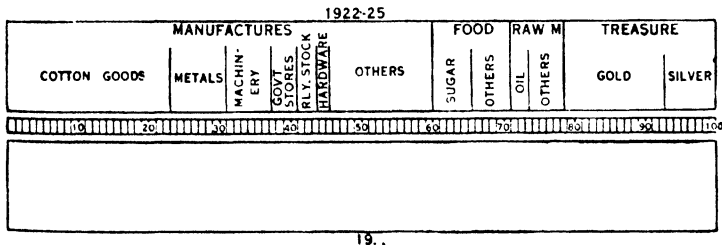


FIG. 38.—The imports of India.

and export. Amongst the imports the huge proportion of gold and silver is remarkable. The poorer classes in India have not yet learnt to appreciate and use savings banks, and what wealth they have is in the form of gold and silver ornaments. Much of the gold is from the Transvaal. In a hot country like India all the

clothing absolutely necessary can consist of cotton garments, hence the large import of cotton manufactures—mainly from England and Japan. It should be noticed that India cannot grow nearly enough sugar for her requirements. Amongst the exports the raw cotton is exported almost entirely from Bombay and Karachi (turn to Fig. 25 for an explanation of this); the jute and tea from Calcutta; the rice from Rangoon; the wheat from Karachi.

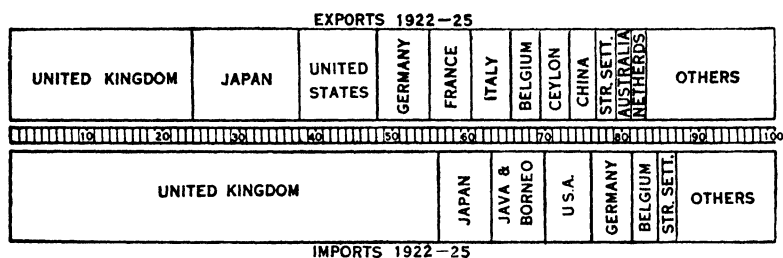


FIG. 39.—The direction of India's foreign trade.

THE PROVINCES AND STATES OF INDIA

ASSAM

Assam has been a separate province since 1912. Its population is only 7½ millions, and there is still plenty of room for more people in many parts of Assam. The seat of Government is Shillong, situated on the high healthy plateau but not served by railway.

Physical Features.—Assam falls into three separate divisions :

- (a) The Brahmaputra Valley along the north.
- (b) The Hills Region, consisting of the hills which separate Assam from Burma, and sending a broad finger westwards to form the Khasi, Jaintia, and Garo Hills.
- (c) The Surma Valley in the south, which joins on to, and really forms part of, the great Delta Region of Bengal.

Along the north of Assam lie the Himalaya Mountains, and certain tracts of Assam form part of the mountain regions.

The first two physical regions form natural regions which lie wholly within the province, and we will describe them in detail, but the Surma Valley will be described later with Bengal.

The Brahmaputra Valley in Assam is roughly 500 miles long, but only about 50 miles wide, and so is very different from the broad Ganges Plain. It is shut in between the lofty Himalayas on the north and the Assam Hills on the south. A great part of the valley has a rainfall of more than 80 inches, but in the centre there is a drier patch. This drier part lies in the rain-shadow of the Garo,

Khasi, and Jaintia Hills, which protect the valley from the south-west monsoon. In the hot season and the rains the sky is cloudy, and the land does not get so hot as in the broad Ganges Valley. The Brahmaputra River itself is broad; it divides and reunites again many times; on either side there is often a waste marshy belt, but a little distance from the river are flat lands given over to rice-growing. Palm trees and villages are dotted about amongst the paddy-fields; farther away from the river we find the gentle slopes covered with tea gardens for which Assam is famous. There are still only 150 people to the square mile in this region, instead of 500 as we find in the Ganges Valley. Less than a quarter of the region is cultivated, whilst nearly half is waste land. Every year Bengalis come from crowded Bengal to settle; Biharis are employed in the tea gardens, and afterwards settle on the land, and so the population is growing. Two-thirds of the cultivated land is used for rice; tea and oil-seeds are the other important crops. Twelve

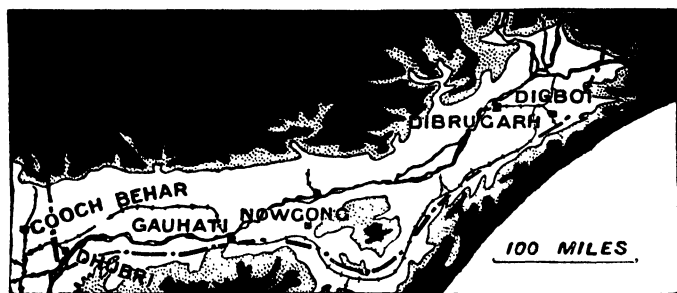


FIG. 40.—The Brahmaputra Valley.

people out of every hundred are connected with the tea industry. Remember that the tea is grown mainly for export. At the eastern end of the region is the small oil field of Digboi. The river is the great highway; notice how it interrupts the railways.

The Hills Region of Assam forms part of the mountain wall between India and Burma. The hills receive a very heavy rainfall, and on the southward slope of the Khasi Hills is Cherrapunji, one of the rainiest places in the world, with nearly 500 inches of rain per year. The most important part of the region is the plateau on which Shillong is situated, and here there is a moderate amount of cultivation. Taking the region as a whole, only one twenty-fifth is cultivated, more than half is waste, and forests cover one-eighth of the whole. Many of the forests are too difficult to reach to be of value, but good sal forests are found on the Garo Hills. The wilder parts of the region are inhabited by various hill tribes, but the more fertile parts of the Garo and Khasi Hills are being cultivated by settlers from Bihar and Bengal. There is a motor road from

Gauhati on the Brahmaputra to Shillong, and a cart road from Dimapur into Manipur State.

NEPAL

Although Nepal is a kingdom quite independent of India, we will consider it next, because it lies to the north of the Ganges Plain, and in Nepal we can learn something more about the mountain wall which guards India on the north. Nepal falls into two natural

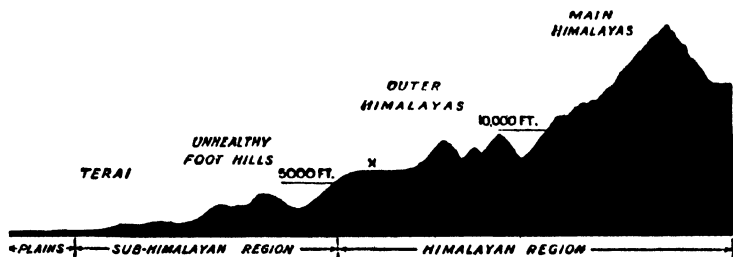


FIG. 41.—Section through the Himalayas.

regions, the Himalayan Region and the Sub-Himalayan or Sub-Montane region.

The Himalayan Region can be divided into four belts, according to vegetation and height above sea-level :

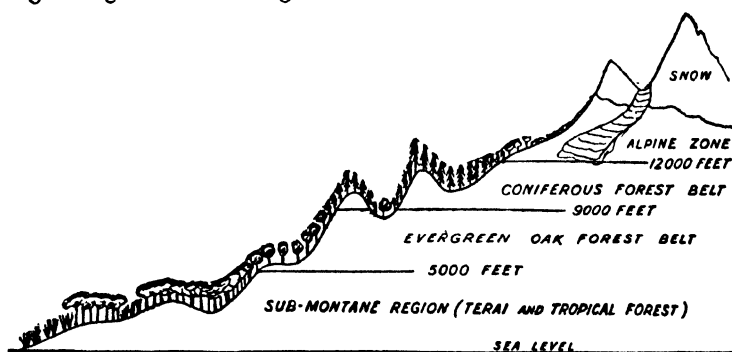


FIG. 42.—Vegetation zones of the Eastern Himalayas.

- (1) Evergreen Oak Forest Belt, 5,000 to 9,000 feet.
- (2) Coniferous Forest Belt, 9,000 to 11,000 feet.
- (3) Alpine Belt, 11,000 to 16,000 feet.
- (4) Snow, 16,000 feet to the top of the mountains.

Although the forests are dense and contain many different trees, they are too inaccessible to be of great commercial value at present.

The Sub-Montane or Sub-Himalayan Region lies between the broad cultivated plains of the Ganges and the Himalayan

Region, extending to a height of 5,000 feet in the Himalayas. It can usually be divided into two strips :

(a) The part nearer the plains, often built up of sand and stones washed down from the hills, is only slightly above the level of the plains. It is often covered with coarse tall grasses, and is known as the Terai.

(b) The part nearer the mountains consists of a belt of hills, usually covered with forest, damp and unhealthy. There are large areas of valuable sal forest.

Cultivation is gradually extending into the Terai, which is being drained, cultivated, and rendered more healthy, and so the population increases.

The principal town of Nepal, Katmandu, is situated in a rich valley amongst the hills. Nearly a quarter of all the inhabitants of Nepal live in this valley.

Nearly all the exports and imports of the kingdom of Nepal pass through India. More than one quarter of the whole of the foreign trade passing the land frontiers of India is with Nepal.

KASHMIR

Kashmir is a large native state, situated amongst the mountains of north-western India. It is ruled by the Maharaja of Kashmir and Jammu, whose capital is at Srinagar.

The greater part of Kashmir lies in the Himalayan region, but the whole country is much drier than Nepal. The north-eastern corner of the state lies on the Tibetan Plateau, whilst the south forms part of the Sub-Himalayan Region.

THE NORTH-WEST FRONTIER PROVINCE

The North-West Frontier Province is one of the smaller provinces of India, and lies mainly between the Punjab and the Afghan frontier on the western side of the Indus. It consists of three British Districts and a large tract of "tribal territory" lying between them and the frontier. The tribal territory is inhabited by wild hill tribes who are left to themselves unless they become restless and attempt to raid the people of the plain. The whole of the province forms part of a single natural region, which may be called the North-Western Dry Hills Region. Some of the adjoining districts of the Punjab belong to the same natural region.

The North-Western Dry Hills Region.—Everywhere the rainfall is small and nowhere exceeds 30 inches. The tract on the west of the Indus consists of a series of three plains—Peshawar, Bannu, and Dera Ismail Khan—divided from one another by the low hills of

Kohat and offshoots of the frontier range. The Indus Valley itself is a fine tract, but the harvests vary greatly with the extent of river floods. The Vale of Peshawar is highly irrigated and well wooded. Where irrigated the Bannu Plain is fertile, but elsewhere is dry and barren. The plain of Dera Ismail Khan is a clay desert, but in good rainfall years becomes grass covered. These plains have very hot summers and very cold winters. To the west of the three plains lie the barren treeless hills inhabited by the wild frontier tribes. In the more sheltered valleys are little villages, and near by the hill-slopes may have sufficient grass for sheep to be kept. The region is almost outside the influence of the monsoon and most of the scanty rain falls in the cold season. The irrigated plains of Peshawar and Bannu are thickly populated and much wheat is grown. Another crop is gram. Millet is grown as a dry crop.

Above Peshawar lies the famous Khyber Pass, the gateway to Afghanistan. A wonderful mountain railway now threads its way through the narrow pass. Peshawar is the most important town of the province, it is the centre of the irrigated land, and controls the Khyber Pass routes.

BALUCHISTAN

Baluchistan lies outside the mountain wall of India and outside the influence of the monsoon, and is a very dry plateau. It includes several British Districts (the most fertile parts), the large native state of Kalat and a number of smaller states. In this barren country there are only six people per square mile—less than in any other Province or State of India. The people are nearly all nomads moving about with their herds of sheep, goats, horses, cattle, and camels. In summer they live in shelters made of branches, or in tents made of goats' hair matting. In winter they live in mud huts in villages. A little land is irrigated by the curious "Karez" or by flood waters from the rivers. The principal crops are millet, wheat, and fodder. Along the sea-coast there are a few fishermen, but a little way away from the coast dates provide food for man and beast for most of the year. There are really no towns in Baluchistan. The Bolan Pass is the easiest route from Baluchistan to India, and the British town of Quetta lies at the head of the pass. Another British station is Sibi. Across the deserts are numbers of old camel caravan routes. One of these, running along the north of the country to the Persian border, has now been replaced by a railway.

THE PUNJAB

Although it lies in the dry north-west, the Punjab is one of the important provinces of India. It has benefited enormously by the great irrigation works carried out by the Government. Punjab

means "five waters" and the Punjab is, strictly, the land of the five rivers—the Jhelum, Chenab, Ravi, Bias, and Sutlej. But the province which extends beyond this area, includes the land between the Jhelum and the Indus, as well as part of the land between the Sutlej and the Jumna and part of the Himalayas. Included in the province are several native states.

The greater part, including the most important lands, of the Punjab forms part of the great plain of Hindustan and will be described under the name of the Punjab Plain. In the north-west is a dry plateau or hilly region which forms a part of the North-West Dry Hills Region. The most important crop is millet, which depends mainly on the scanty rainfall. There is an oil field near Attock, and salt is mined in the Salt Range. The principal town is

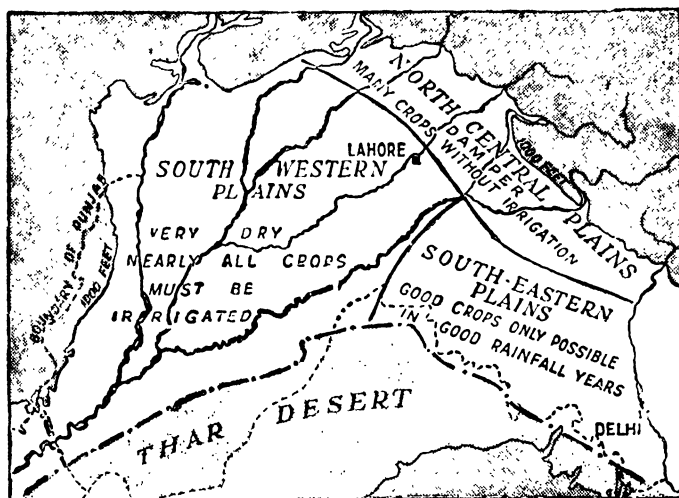


FIG. 43.—The three divisions of the Punjab Plain.

Rawalpindi, at the foot of the Himalayas, from which a road runs to the hill station of Murree and to the heart of Kashmir. The north-eastern part of the Punjab includes portions of the Himalayan and Sub-Himalayan Regions, whilst the south-east borders the Thar Desert.

The Punjab Plain is a broad alluvial plain without a hill at all. It slopes almost imperceptibly south-westwards. South of the Sutlej the land rises gradually and fades away into the Thar Desert. Five rivers thread their way across the plain—the Jhelum, Chenab, Ravi, Bias, and Sutlej. Eventually they all join to form the Panchnad, which in turn joins the Indus. In the dry season the rivers are shallow and slow, but in the rainy season, when the warm sun has melted the snows on the Himalayas and the monsoon

rains are pouring down on the Himalayan slopes, the rivers become rushing torrents often miles wide. The rush of water does not always follow the same channel. The river may leave its old bed and in a single night destroy miles of fertile fields. The whole region is very dry ; it is driest in the south-west, where the rainfall is less than 5 inches. The extremes of temperature between the hottest and coldest months should be noted.

The Punjab Plain can be divided into three parts :

(a) The North-Eastern Plain. This is the wettest part—near the foot of the Himalayas. There are numerous wells for irrigation in this region, but dry crops may also be grown without irrigation.

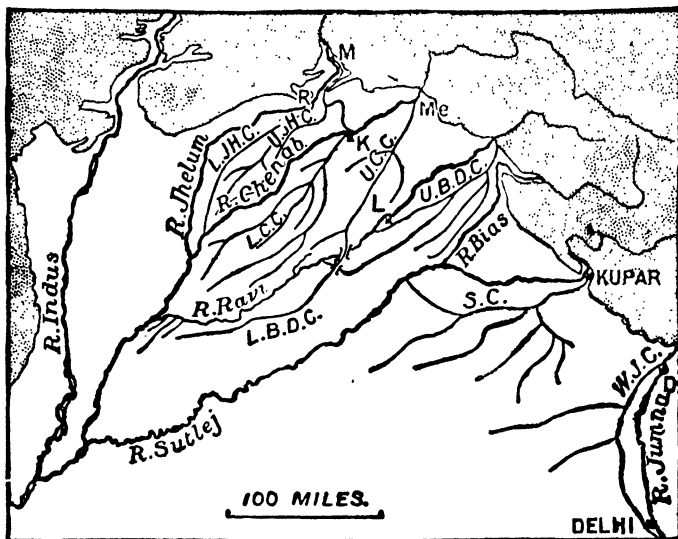


FIG. 44.—The Punjab canals.

(b) The South-Western Plain is so dry (5–10 inches) that it is practically impossible to grow anything without irrigation.

(c) The South-Eastern Plain, where the rainfall is usually from 20 to 30 inches but varies greatly from year to year. In good rainfall years many dry crops can be grown ; in bad years none.

More than half the crops depend upon irrigation. There are six important systems of Government Canals.

(1) The Western Jumna Canal takes its water from the River Jumna near where it leaves the mountains and waters the south-east of the plain.

(2) The Sirhind Canal is an old system taking its water from the Sutlej River and also watering the south-eastern plain.

(3) The Upper Bari Doab Canal takes its water from the Ravi River, where the Ravi leaves the mountains.

(4) The Lower Chenab Canal is one of the largest of the irrigation works in India. A great weir was built across the River Chenab at Khamki.

(5) The Lower Jhelum Canal takes its water from the Jhelum.

(6) The Triple Project or Upper Chenab-Lower Bari Doab Canal System is one of the cleverest examples of canal irrigation that exists. The Upper Chenab Canal takes its water from the Chenab at Meralā, near the foot of the Himalayas. The main canal is carried across the Ravi River by an aqueduct or "water bridge" and then becomes the Lower Bari Doab Canal. But when this scheme was arranged it was found that so much water would be taken by the Upper Chenab Canal that none would be left for the Lower Chenab Canal. And so the Upper Jhelum Canal was built to bring water from the Jhelum to the Chenab at Khamki to help fill the Lower Chenab Canal.

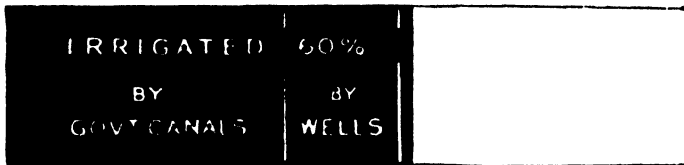


FIG. 45.—Proportion of crops irrigated in the Punjab.

As a result of irrigation many parts of the Punjab are "double cropped." Wheat, the most important crop, covers nearly a third of the area. It is reaped in spring; millet is often grown on the same ground and reaped in autumn. Wheat and millet, together with maize, form the staple food of the people. An excess of wheat is available for export and is sent to Europe through the port of Karachi. Another crop is barley. Oil-seeds are grown mainly for export. By far the most important crop not grown for food is cotton. On the irrigated land the long-stapled American cotton is grown and exported through Karachi. The Punjab being a dry region, much fodder is grown to feed the cattle used in ploughing.

The majority of the people are engaged in agriculture. In the old days the cultivators suffered severely from raids of war-like tribes of the hills, and so lived together in villages for protection. They still live together in small villages scattered over the plains. The huts are of mud or mud and wattle, and the roofs of the huts are flat, for there is little rain to run off. There are very few large towns.

Lahore is an old historic city and an old capital, and is now the centre of government of the Punjab. It forms one of the collecting centres for the rich northern parts of the plain. *Amritsar* is another centre near by. It is the holy city of the Sikhs and a busy trading town, and manufactures carpets. It suffers, however, very badly from fever. *Multan* is the natural centre of the dry south-western plain. Much of the trade to Karachi passes through Multan, which has long been a busy market town. Afghan traders visit the town and exchange their raw salt, spices, and fruits for piece goods.

Gujranwala and *Ludhiana* (with cotton-mills) are other centres in the northern part of the plain, whilst *Hissar* and *Jind*, and still more important *Patiala*, are in the south-east.

THE UNITED PROVINCES

The United Provinces of Agra and Oudh have a smaller area than the Punjab, but have nearly twice as many people. The population is denser than in any province of India except Bengal. Yet a large part of the United Provinces has a rainfall of less than 40 inches, and their prosperity is largely due to the great irrigation works. The north-western part of the United Provinces stretches into the Himalayan and Sub-Himalayan Regions (compare the Punjab), and a small strip along the south forms part of the Central Indian Plateau. But the largest part of the Provinces lies in the great Ganges Plain. The area west of Allahabad receives less than 40 inches of rain in a year, and so forms a natural region which we may call the Upper Ganges Valley or Dry Belt. The region east of Allahabad forms half of the Middle Ganges Valley, of which the other half lies in the Province of Bihar and Orissa.

It is in the United Provinces that great extensions of cultivation have been made in recent years into the Sub-Himalayan Region. Dehra Dun is one of the headquarters of the Forest Department in India. A famous and sacred place is Hardwar, where the Ganges leaves the mountains. A line of towns has sprung up on the borders of this region and the Ganges Plain—like frontier towns from which the cultivators have attacked the unhealthy foothills. Examples are Saharanpur, Pilibhit, Kheri, etc.

The Upper Ganges Valley, like the Punjab Plain, is a vast plain without a hill. Running roughly through the centre from north-west to south-east is the Ganges; marking roughly its south-western border is the Jumna. The region consists, therefore, of the Ganges-Jumna Doab and a large stretch of country north-east of the Ganges. The whole plain slopes very, very gently from Delhi (700 feet above the sea) to Allahabad (400 feet). The plains are cold in the cold season, but get very hot in the hot weather, though not quite so hot as the Punjab Plains. Since the rainfall is

nearly everywhere less than 40 inches, it is necessary to irrigate the land. The Ganges-Jumna Doab is especially well served by irrigation canals, and more than 50 per cent. of the crops are grown on irrigated land. In the Upper Ganges Valley there are four large canal systems :

(1) The Eastern Jumna Canal, which takes the water from the Jumna River near Faizabad, just where the river leaves the mountains.

(2) The Agra Canal, which takes the water from the Jumna River just below Delhi.

(3) The Upper Ganges Canal, which takes the water from the Ganges near Hardwar, where it comes down from the Himalaya Mountains.

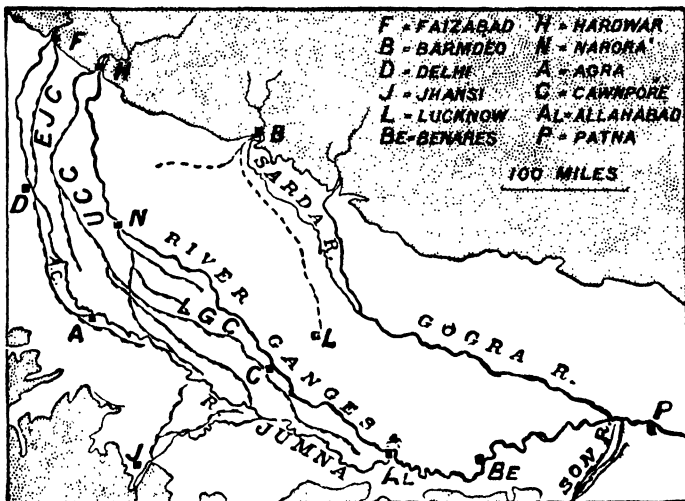


FIG. 46.—The irrigation canals of the United Provinces.

(4) The Lower Ganges Canal, which takes the water from the River Ganges at Narora.

(1), (3), and (4) water the Doab ; (2) waters the land south of the Jumna. A big scheme to use the water of the River Sarda near Barmdeo, and to irrigate the country from there to Lucknow, is now in course of construction. North of the Ganges, too, there is much irrigation from wells and tanks.

Of the whole Upper Ganges Plain more than two-thirds is cultivated, and only 15 per cent. is waste land. There are no forests at all. The most important crops are wheat, barley, and rice, all grown on irrigated land ; whilst millet is the most important dry crop. Everywhere wheat is more important than rice, and in some of the western districts no rice is grown at all. Maize, gram, cotton,

fodder, and sugar occupy considerable areas. The cotton grown on the irrigated land is the valuable long-stapled American cotton. Nine out of every ten people in this region are engaged in cultivation, and live in small villages in huts of mud and wattle. Only one person in ten lives in a town. Although the Upper Ganges Valley is so densely populated, there are only fourteen cities with more than 50,000 people. Of the famous old towns Lucknow, Allahabad, and Muttra are now the most important.

Lucknow is an old capital and still the largest town in the province, though it is getting smaller. It is a railway centre. *Allahabad*, situated at the junction of the Jumna and Ganges, is an important place of pilgrimage. Now that railways have supplanted river routes, it has become a great railway junction and a collecting centre. *Muttra* is an old religious centre. *Farrukhabad*, on the Ganges, is an example of a place which used to be important owing to its situation on the great waterway, but the railways have left the town alone and it is rapidly declining.

Of the more modern or progressive cities there are :

Cawnpore, collecting centre and railway junction, with numerous manufactures of its own. *Meerut*, *Moradabad*, *Agra*, *Bareilly*, and *Aligarh*, all of which are growing centres of rich parts of the region. Notice the railways of the region.

The Middle Ganges Valley is a natural region lying partly in the United Provinces (east of Allahabad) and partly in Bihar. It is damper than the Upper Ganges Valley, and irrigation is less necessary. The wet-region crop, rice, gradually becomes more important than wheat. When compared with the Upper Ganges Valley there is more rain and a smaller annual range of temperature. We shall describe the region in greater detail under Bihar and Orissa. Taking the part which lies in the United Provinces, *Benares*, on the Ganges, is the largest town ; an ancient centre of Hindu culture and a very sacred place of pilgrimage. *Faizabad* is a neglected river port, but *Gorakhpur* is now the great collecting centre and railway centre.

Along the north this part of the United Provinces borders Nepal, and a small strip of the United Provinces really lies in the Sub-Himalayan Region. There is a line of towns along the border, from which cultivation has been extended right to the Nepal frontier.

BIHAR AND ORISSA

The Province of Bihar and Orissa has only been in existence since 1912, and was partly carved out of Bengal. It is almost exactly the same size as the United Provinces, but includes a large area of forested plateau land, and so has fewer inhabitants. Patna on the Ganges is the provincial capital. The province falls very

easily into three natural regions which also correspond approximately with administrative divisions. These regions are (1) The Middle Ganges Valley, corresponding roughly with Bihar ; (2) The Chota Nagpur Plateau, corresponding with Chota Nagpur ; (3) The Orissa Coastal Strip embracing the division of Orissa.

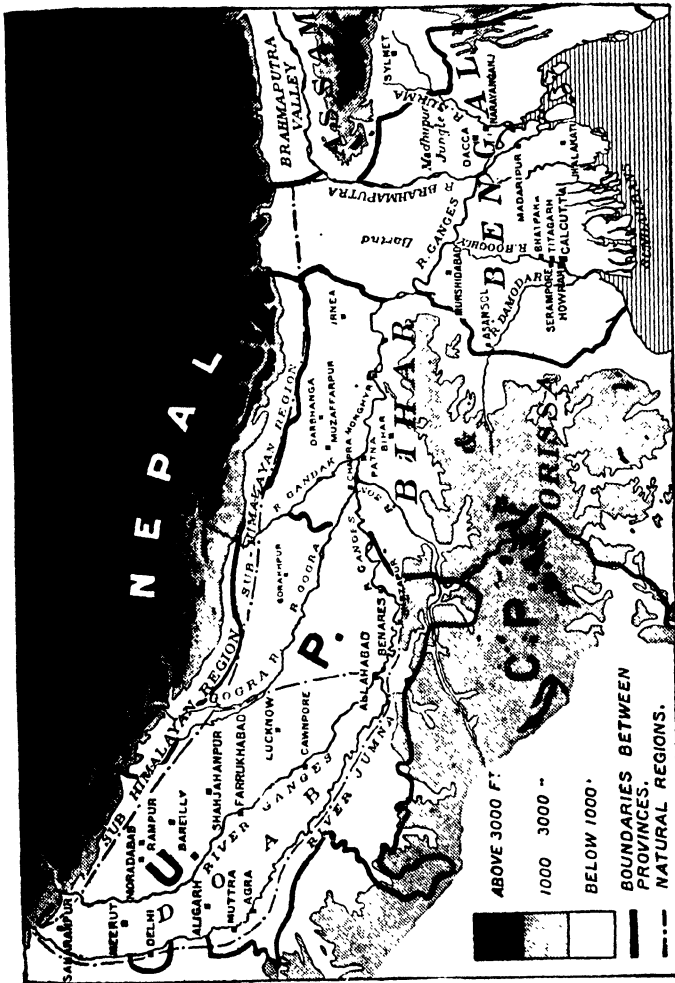


FIG. 47.—The Ganges Plain.

The Middle Ganges Valley.—This part of the Middle Ganges Valley is a little damper than the part lying in the United Provinces. Fig. 48 shows clearly the difference between the crops of this region and those of the Upper Ganges Valley. The inhabitants are the Biharis, who do not live in villages, but in small houses in the

midst of their fields. The pressure on the land is so great that every year large numbers of Biharis go to work in the tea plantations of Assam, or on the docks of Calcutta.

Patna is the seat of provincial government and a large collecting station. It has given its name to Patna rice, a very fine kind of rice. It is on the south of the Ganges, and so connected directly with Calcutta by railway. Patna lies also just below the junction

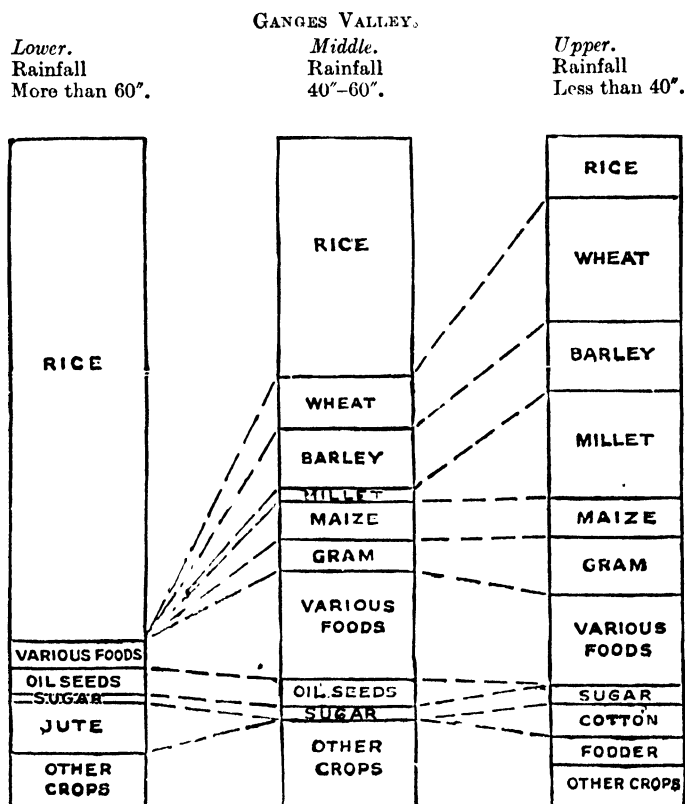


FIG. 48.—The crops of the Ganges Valley.

of three important tributaries of the Ganges—the Son, Gandak, and Gogra. *Monghyr* is a famous old town also on the southern bank of the Ganges; *Bhagalpur* is another town on the Ganges, farther east. Then there are several important towns which serve as collecting and distributing centres for the rich plains north of the Ganges. Examples are *Darbhanga*, *Muzaffarpur*, and *Purnea*. In the north the Province of Bihar and Orissa borders Nepal and includes a small strip of the Terai country, described under Nepal.

The Chota Nagpur Plateau forms the north-eastern corner of the great plateau of Peninsular India. It is thinly populated and includes some of the wildest parts of India. In the depths of the forests are primitive tribes, such as the Santals, who still use bows and arrows and wear no clothes. An important industry is the collection of lac from the trees. The plateau consists mainly of old hard rocks ; in the north there are mica mines, in Singhbhum iron and copper ores are obtained. On the borders of the plateau are tracts of coal-bearing sedimentary rocks, and it is on the borders of Bihar and Orissa and Bengal that the most important coal fields of India are found. The coal fields of Jharia, Raniganj, and Giridih produce about 19,000,000 tons a year, or nine-tenths of all the coal of India. There is a smaller field at Daltonganj in the north. The important towns are the coal-field towns, including the railway centre of Asansol. On the plateau is Ranchi, the hot-weather capital of the Province.

Orissa forms part of the coast region of the northern part of the east coast—the Northern Circars Region. Along the coast itself are useless sand-dunes or mangrove swamps, behind which are fertile paddy lands. Further inland are low tree-covered hills, and fertile valleys. Two-thirds of this fertile and thickly populated region are cultivated, and rice occupies more than four-fifths of the cultivated land. The chief towns are *Puri*, a famous place of pilgrimage, and a seaside resort ; *Cuttack*, an old capital of the kings of Orissa ; and *Balasore*, once an important port with English, French, and Dutch factories, but now little used.

BENGAL

Nearly the whole of Bengal belongs to one natural region—the Lower Ganges Valley or Deltas Region—consisting of the deltas of those mighty rivers, the Ganges and Brahmaputra. In the north a small strip of Terai country (known in Bengal as the Duars) belongs to the Sub-Himalayan Region, whilst the district of Darjeeling lies in the Himalayan Region. In the east the Lushai Hills and the small state of Hill Tippera belong to the Eastern Hills Region ; in the west the region near the coal fields may be considered as belonging to the slopes of the Chota Nagpur Plateau. But by far the greater part of Bengal belongs to the Deltas Region.

Deltas Region.—For thousands of square miles there is not a hill or even a rock ; the soil is everywhere a fine silt (alluvium) and not a stone is to be found. The region is practically flat ; the rise from the sea towards the north is so gradual that it cannot be seen. Owing to the heavy rainfall—nearly everywhere over 60 inches—the country is always green and does not get dried up and brown like the Upper Ganges Valley.

The region may be divided into three parts :

(a) *The Ganges-Brahmaputra Doab, or North Bengal*, sloping gradually from the Sub-Himalayan Region in the north towards the Ganges. There are numerous silted-up river channels, and even now the rivers frequently change their courses. The usual flat surface is broken by a stretch of low hills called the Barind, covered by the remains of a former forest.

(b) *The Old Delta, or Central and Western Bengal*.—The great delta of the Ganges and Brahmaputra has moved gradually to the east, and Central Bengal is now a land of dead and dying rivers. The place of river channels which used to carry water from the Ganges to the sea is now often taken by large swamps or “bils.” Many of the bils have been drained and form valuable rice-land. Near the sea are the Sundarbans—great swamp forests. In Western Bengal west of the Hooghly River the level of the land gradually rises and the soil becomes poorer and harder, and the plain passes into undulating ground on the borders of the Chota Nagpur Plateau.

(c) *The New Delta, or Eastern Bengal*.—Here the great rivers are still actively building up their deltas, and every year huge quantities of silt are brought down by the Ganges and the Brahmaputra. In the high-water season a great part of the area is flooded, and a rich deposit of silt is spread over the country. In this region, the true delta, there are few or no roads ; bullock-carts are useless, and nearly all travelling is done by boats. Closely connected with this region is the Surma Valley, which lies in the Province of Assam. The houses in the delta are built on mounds to prevent them from being flooded in the rains. Although so wet, this is a densely populated country and produces enormous quantities of rice and jute. In the north is a slight ridge, the Madhupur jungle. Although insignificant, this ridge has been sufficient to prevent the great rivers moving still further eastwards.

If we look at the uses to which the land is put we find 6 per cent. is covered with forests. These are the Sundarbans, and they furnish firewood for the numerous towns. Nearly a quarter of the region is covered by bils, swamps, rivers, etc., and cannot be used. There is about 11 per cent. of waste land, mainly in the Barind, Madhupur Jungle, and Western Bengal. That leaves nearly two-thirds of the land, which is cultivated. Look again at Fig. 48, and notice that by far the most important crop is rice, covering three-quarters of the cultivated land. Jute is another important crop. The dry-zone crops—wheat, barley, millet, maize, etc.—have all entirely disappeared.

Nearly all the people in this region speak Bengali. Three-

quarters of them are cultivators and live, not in villages, but in small houses or huts on mounds in the midst of their fields. They have not the same fear of fierce invaders as the people of the Punjab Plains, who in times past were forced to live together in villages for protection.

All the largest towns are industrial towns which have sprung up within recent years around rice or jute mills.

Calcutta is the largest city in India, and the second largest (after London) in the British Empire. *Dacca* is the second city of the region, and is the centre of the rich lands of the New Delta. Unlike Calcutta, it was an important city 300 years ago. Outside Calcutta and Dacca there are really no large cities or towns. The jute-mill and rice-mill towns, such as *Bhatpara*, *Titagarh*, and *Serampore*, are mainly on the River Hooghly. *Jhalakati* is a trade centre of Eastern Bengal, and the centre of the betel-nut trade. *Narayanganj* (a river port) and *Madaripur* are other collecting centres. *Goalundo* is another river port. *Sylhet* is the centre of the Surma Valley of Assam. Notice the succession of canals—the Calcutta and Eastern Canals—by which rice and jute can be sent by water direct from Eastern Bengal to the mills on the Hooghly.

BOMBAY

Next to Burma the Presidency of Bombay is the largest Province of India. Many parts of it are, however, thinly peopled. It includes the great region known as Sind, which is really the lower part of the Indus Valley and part of the Plain of Hindustan. The Peninsula of Kathiawar is made up of a large number of small native states whilst the important native state of Baroda is composed of several isolated tracts of country north of Bombay. The Presidency runs a considerable distance down the west coast of India, and also includes a large section of the plateau of Peninsular India. It is thus obvious that the large and irregular-shaped Presidency of Bombay will fall into a number of natural regions. We can distinguish :

- (a) Sind or the Lower Indus Valley, a very dry plain.
- (b) Gujarat, including Kathiawar and Baroda, an irregular and variable natural region.
- (c) The West Coast Region, a very wet region which lies between the Western Ghats and the sea.
- (d) The Deccan Lavas or Black Cotton Soil Region, forming part of the plateau.

Sind consists of a broad, dry alluvial plain stretching from the edge of the Baluchistan Plateau on the west to the Thar Desert on the east. Running from north to south through the centre is its life and soul—the Indus River. Just as Egypt is the gift of the Nile,

so Sind is the gift of the Indus. In the past irrigation in Sind has been by "inundation canals," which are only filled with water when the river is in flood, and which dry up in the hot weather. But now a great dam has been built at Sukkur, in the north of Sind, and the country will shortly be irrigated by perennial canals. The Sukkur or Lloyd Barrage Scheme is one of the largest works for irrigation ever attempted. Away from the irrigated land Sind is a lonely barren desert.

Practically no "dry" crops are grown in Sind. On the irrigated land wheat, millet, and cotton are the leading crops.

The largest town in Sind is *Karachi*, the third port of India. Another important town is *Hyderabad*, near the head of the delta.

Gujarat on the whole is a lowland region, but it has numerous small hills. At the northern end it adjoins the Thar Desert and the very dry region of Sind; at the southern end it adjoins the very wet region of the west coast. So we find the climate of Gujarat varies greatly from one part to another.

Most of the important towns of Gujarat lie on the railways. *Baroda*, the capital of the important state of Baroda, is a large railway junction, and has modern cotton-mills. *Surat*, near the mouth of the Tapti, was once the leading port of the west coast, but its place has been taken by Bombay. *Cambay* and other towns round the Gulf of Cambay are less important than formerly. Their local industries have largely been replaced by the great cotton-mills of Bombay. *Ahmadabad* is the great collecting centre of Northern Gujarat, and is also a mill town.

KATHIAWAR is a large peninsula suffering from a very variable rainfall. In the centre are forest-covered hills with valuable timber, but much of the country is a barren land of very little value. The people and their villages are concentrated in a few of the more fertile valleys. The towns of Kathiawar are mostly capitals of states, but also act as collecting centres for the more fertile portions of the peninsula.

CUTCH is a barren, rocky, treeless, and useless country, still drier than Kathiawar.

The West Coast Region runs right down the western coast of India. The northern part lies in the Bombay Presidency, the southern part in Madras. Halfway down the coast is the Portuguese territory of Goa. There are few bays which can be used as harbours, and only one important island, that on which Bombay stands. In the northern part of the region, it is only from Bombay that the mountain escarpment of the Western Ghats can be easily crossed. The West Coast Region really falls into three parallel strips. Near the sea are lines of sandbanks on which coconuts grow. At intervals are mangrove swamps. Behind the sandbanks are the flat alluvial lands. Everywhere the rainfall is more than

80 inches, and rice occupies half the cultivated land. Further inland are the hill slopes covered with dense evergreen forests. Forests cover a quarter of the whole region. The many short rivers are of little use for boats, but many of them can be used for floating logs of timber from the forests. In years to come they may be used for generating electricity. *Bombay* is the only really large town.

The Deccan Lavas Region.—The north-western part of the great plateau of Peninsular India has been covered by great sheets of lava which weathers into a dark soil, particularly suited to cotton. The great sheets of lava have only been cut through by some of the deeper river valleys, such as that of the River Tapti. Except the Dharwar district in the south, the whole of Bombay east of the Ghats lies in this natural region. The region also includes Berar and the western half of Hyderabad. The region lies in the rain-shadow of the Ghats, and except along a narrow strip near the Ghats the rainfall is less than 40 inches. Forests cover a considerable area, and are found especially on the slopes of the Western Ghats. There grow

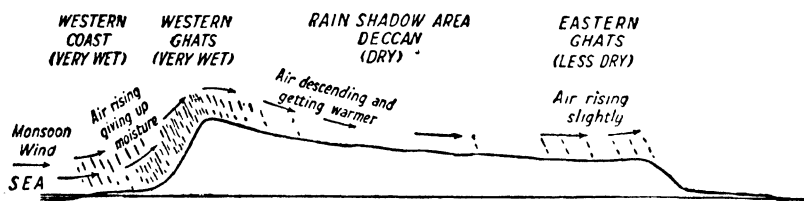


FIG. 49.—Section across the Plateau of Peninsular India.

teak and other valuable trees. Two-thirds of the area is cultivated, but the crops are nearly all dry crops since there is little flat land available for irrigation, nor are there any large permanent streams whose water could be used. The use of wheat is spreading, but the staple food grain is still millet, and millet covers nearly half the cultivated land. This is the greatest cotton-growing region of India, and nearly a quarter of the cultivated land is devoted to cotton. The short-stapled Indian cotton is grown principally. The raw cotton is sent to Bombay, either to be exported raw or used in the mills there. This drier region does not support so many people as the wetter rice-growing lands, and there are only about 150 people to the square mile.

Poona lies near the crest of the Western Ghats, and commands one of the gaps or gateways leading to Bombay. It is the hot-weather capital of the Bombay Presidency. *Sholapur* is a big centre farther south.

MADRAS

Among the Provinces of India, the Presidency of Madras comes next in size after Burma and Bombay, but it is much more thickly

populated than either. The Presidency lies in the following natural regions :

- (a) West Coast Region, very wet.
- (b) Carnatic Region, or Tamil Plains, forming the southern part of the east coast.

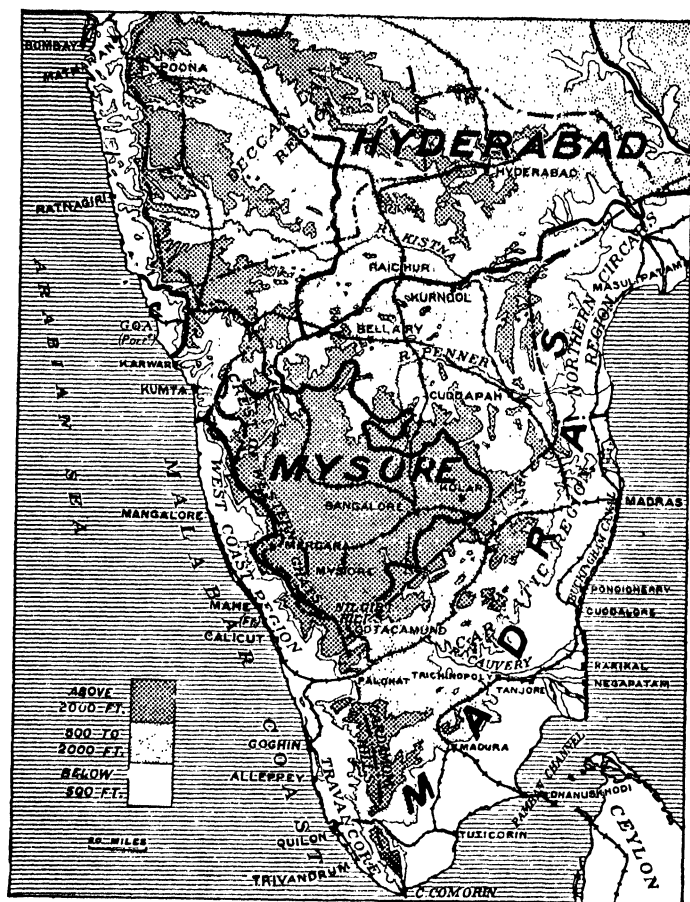


FIG. 50.—Map of Southern India (Bombay, Madras, Hyderabad, and Mysore).

- (c) The Northern Circars Region, or northern part of the east coast.
- (d) The Deccan Plateau.

The West Coast Region in Madras is similar to the part in Bombay, but the alluvial plains between the hills and the sea are

broad. The whole region is very wet, and can be divided, still more distinctly, into three strips :

(a) The sand dunes along the coast, largely covered by coconuts.

(b) The flat alluvial land behind the sand dunes. The water of small streams from the hills is prevented from reaching the sea by the line of sand dunes, and so spreads out to form shallow lagoons. The lagoons have been connected by canals, and it is possible to travel for hundreds of miles along the west coast through these canals. Many of the lagoons are open to the sea, and some are deep enough to form harbours for native craft. One, the harbour of Cochin, is being dredged near its mouth, and may soon form a very important harbour on the west coast. The banks of the lagoons are often lined with coconut plantations, whilst every suitable piece of land is planted with paddy. Here and there are groves of the areca or betel-nut palm, and the pepper plant, for which this coast has so long been famous, is still grown.

(c) The slopes of the Western Ghats are covered with dense evergreen forests, and forests cover nearly a quarter of the whole region.

This region is densely populated. The staple food is, of course, rice, but many of the rice cultivators are backward, jungle tribes. The coconut palm is of great importance to the inhabitants. Their huts are thatched with its leaves ; the wood is used for building and for firewood. The preparation of the fibre of the husks, or "coir-picking," is an important industry and the dried kernel (copra) is exported. Coconut oil is also obtained, and the juice of the coconut is made into a strong drink. Rubber planting is becoming a noteworthy industry in Travancore. Fishing is a common occupation along the coast.

Mangalore is a small town connected by rail with Madras. *Calicut* is the fourth largest town in the Madras Presidency, and has a small timber trade. Like Cochin, it was once a famous spice port. *Cochin* is likely to increase greatly in size and importance when its harbour is deepened. *Alleppey* and *Quilon* in Travancore are growing industrial centres where coir rope and mats are made. *Trivandrum* is the chief town of Travancore, and can now be reached by railway from Madras.

The Carnatic Region stretches from the coast of the Bay of Bengal to the crest of the Cardamom Hills, which separate it from the West Coast Region, and, further north, to the edge of the Deccan Plateau. The Carnatic Region falls into two parts ; the lowlands near the coast or Coastal Plain, and the hilly western part. The Coastal Plain consists mainly of alluvium, but the hills are of

old hard rocks. The climate of this region is different from that of all other parts of India, the rainiest months being October, November, and December.

Nearly two-thirds of the coastal plain is cultivated, but rather less than a half of the hilly parts, of which a quarter is covered by forests. This part of India used to suffer greatly from famine, for the rainfall is only about 40 inches—much less in the western parts—and varies greatly from year to year. There are many “tanks,” but in bad rainfall years the tanks may never be filled. Government has now completed a number of large irrigation works in this region, but the irrigated land is not nearly so extensive as in the dry parts of the Hindustan Plain. The Periyar River flows down the very wet western side of the Cardamom Hills. The water has now been brought through a tunnel to the dry eastern side of the hills, and used to water the flat land round Madura. West of Madras a large tract of country is watered from the Poini, Palar, and Cheyyar rivers. A great system of canals covers the Cauvery Delta. This is one of the oldest of the large irrigation works in India.

In the coast lands rice is more important than millet, in the hills millet is more important than rice. Both are used by the people as staple foods. Everywhere a considerable area is devoted to ground-nuts and cotton. Down the sandy dunes of the coast many coconuts are grown. On the slopes of the Nilgiri Hills there are tea gardens. The most important trees of the forests are teak and sandalwood. Mica is mined in Nellore. Along the coast salt is obtained from the sea, and there are many fishermen; but there are no inlets to serve as harbours. At the small ports steamers have to anchor a mile or more from the shore, and land their goods and passengers by small boats. *Madras* has the only good harbour along the coast—it is entirely artificial. Madras is the third largest city and the fifth most important port in India. As a port its trade is a long way behind Karachi and Rangoon. There are cotton-mills in Madras, and both cotton goods and raw cotton are exported. The tanning of hides and export of leather also belong to Madras. *Pondicherry* is the capital of the French possessions in India, which comprise a few isolated towns.

Cuddalore and *Tuticorin* (famous for pearl fisheries) are two ports. *Madura*, *Trichinopoly*, and *Tanjore* are inland centres.

Dhanushkodi is only 22 miles from the nearest point of Ceylon. It is not really a town, but merely the terminus of the South Indian Railway; the mails to Ceylon go by this route.

Notice the railways from Madras, and the way in which they make use of natural gaps to reach the west coast. Near the coast, running north and south from Madras, is the Buckingham Canal.

The Northern Circars Region.—This region lies between the crest of the Eastern Ghats and the Bay of Bengal. The central

part is made up of the big irrigated deltas of the Godavari and Kistna rivers. Elsewhere the region is hilly and many of the hills reach right to the coast. The flat areas are of alluvium, but the hills are of crystalline rocks. Manganese ore is obtained near Vizagapatam. More than half the land is cultivated; on the damper hills there are forests. Taking the region as a whole, rice is the chief crop, followed by millet. It is interesting to notice the effect of rainfall on crops. The dry district of Guntur, with 31 inches of rain, has only 3 per cent. of rice. Northwards there is a gradual increase in rainfall and rice; wet Ganjam, with 45 inches of rain, has 54 per cent. of rice.

There are no good harbours down the coast, but great progress is being made with a big harbour scheme for *Vizagapatam*. This town is partly sheltered behind a headland called the Dolphin's Nose. A railway is being built from Vizagapatam inland to the

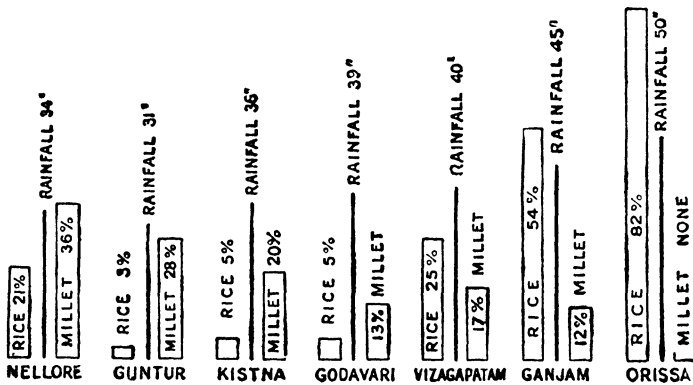


FIG. 51.—Crops and rainfall on the East Coast.

heart of Central India. *Cocanada* is at present the largest port, and has a small but rich hinterland. *Masulipatam*, *Calingapatam*, and *Gopalpur* are other small ports. *Vizianagram* is the largest inland town.

The Deccan Plateau.—The “Deccan districts” of Madras lie on the Deccan Plateau, but we will describe the main plateau under Mysore before dealing with this area.

The Eastern Ghats are partly occupied by the Agency Division of Madras—to be described later.

MYSORE

This important native state is ruled by a Maharaja who has direct relations with the Government of India. Mysore lies entirely on the high southern part of the Deccan Plateau. Besides embracing Mysore, the Deccan Plateau stretches away northwards to embrace

the Deccan districts of Madras, the eastern half of Hyderabad, and the Dharwar District of Bombay.

The Deccan Plateau.—In some books the whole of the plateau of Peninsular India is called the Deccan; but, strictly speaking, only the southern part should receive that appellation. In the south the plateau is higher, and has not been so cut into by river valleys as it has been farther north. The crests of the Western Ghats usually exceed 3,000 feet, and the whole of Mysore is over 2,000 feet. But farther north the Kistna and its tributaries have cut deeply into the plateau, and the portions of the plateau lying in Madras and Hyderabad are between 1,000 and 2,000 feet high. The Deccan Plateau lies in the rain-shadow of the Western Ghats, and is dry. A strip along the western side, which is really the slopes of the Ghats, is damper, but some of the plateau receives less than 20 inches a year. Unfortunately, too, the rainfall is irregular, and in some years the numerous tanks are not even filled with water.

The plateau consists entirely of old crystalline rocks. Gold is mined in the Kolar Goldfield of Mysore. Manganese ore is also obtained in Mysore. Although the old rocks yield a poor soil, more than half the plateau is cultivated, and some of the flatter parts are irrigated. Forests cover a considerable area on the damper western parts and on the wetter slopes of other hills. Millet is the leading grain, but rice can be grown on the flat surface of the plateau in Mysore, or on the irrigated valley land in Madras. Cotton occupies one-tenth of the cultivated area. Coffee-planting used to be an important industry in Mysore, but a disease destroyed many of the bushes, and recovery was prevented by foreign competition, especially of Brazilian coffee. Sheep flourish on the dry grass on the hillsides, and the Deccan Plateau has a quarter of all the sheep of India.

Mysore is the capital of the state, but *Bangalore* is the largest town and seat of government. There are silk factories at Mysore and Bangalore. *Kolar* is the centre of the gold fields. Outside the borders of Mysore is *Ootacamund*, the hill station of Madras Presidency. In the Deccan districts of Madras is *Bellary*, the largest town, and *Kurnool*, which lies at the head of the Kurnool-Cuddapah Canal. This canal formed a small part of an enormous scheme to irrigate most of the drier part of Madras, but it was a failure.

The tiny British Province of Coorg, with its principal town, Mercara, lies to the south-west of Mysore, on the slopes of the Western Ghats. Much of it is forested.

HYDERABAD

Hyderabad is the largest native state in India, and is ruled by the Nizam. The capital of the state, Hyderabad, is the fourth largest city in India. The state lies entirely on the plateau of

Peninsular India, and falls into two halves. The western half, or Marathwara, where Marathi is spoken, is covered by the Deccan Lavas, and forms part of the Deccan Lavas Region, already described under Bombay. It is not so highly developed as the neighbouring parts of Bombay and Berar, but grows very large quantities of cotton, and, as in Berar, the staple food of the people is millet. Gulbarga and Aurangabad are two of the most important towns.

The eastern half, or Telingana, where Telugu is spoken, is part of the Deccan Plateau, described under Mysore. The old crystalline rocks yield a less fertile soil, and very much less cotton is grown than in the western half. There are about 150 people to the square mile. Hyderabad is the natural centre of the state, and is now well served by railways.

The north-eastern part of Hyderabad slopes down towards the Godavari River, and cannot really be considered as part of the Deccan Plateau. The Godavari Valley almost forms a natural region of its own, which lies mainly in the Central Provinces.

THE CENTRAL PROVINCES—including BERAR

The Central Provinces and Berar occupy a large area in the heart of India. The Central Provinces are larger than the United Provinces, but have only one-third as many people. On the whole, the Central Provinces are not so well developed as most of the British Provinces in India, largely because the country is not so suited for development.

The country is very varied. Running through the north of the Central Provinces is the great line of highlands which divides Peninsular India from Northern India—the Satpura Line. In the Central Provinces the highlands are known as the Mahadeo Hills and the Maikal Range, and pass eastwards into the Chota Nagpur Plateau. North of this line the country belongs to the Central Indian Foreland. South of this line is Berar, forming part of the great cotton-growing region of the Deccan Lavas, described under Bombay. The flat land round Nagpur forms part of the Godavari Valley. Around Raipur is another plain, the Chhattisgarh Plain, or Valley of the Mahanadi, whilst in the south are the wild hill regions of the Eastern Ghats.

Berar is the most developed region, on account of its rich cotton soil. Akola and Amraoti are the collecting centres from which the cotton is sent by rail to Bombay.

The Chhattisgarh Plain, or Valley of the Mahanadi, is a rice-growing region centring round the town of Raipur. The rainfall is only a little over 40 inches, so a good proportion of the land has been irrigated.

The Eastern Ghats form a wild hilly region, like the Chota Nagpur Plateau, inhabited largely by primitive forest tribes.

Jubbulpore is a large and important town, occupying a key position at the head of the Narbada Valley, just where the Central Highlands can be easily crossed.

RAJPUTANA AND AJMER-MERWARA

Rajputana is a large federation of native states in the north-west of India, south of the Hindustan Plains. In the centre lies the small British Province of Ajmer-Merwara. Running through the centre of Rajputana from south-west to north-east is the Aravalli Range. North-west of this range the country is very dry, and slopes down gradually towards the Indus Valley and the Punjab Plain. This sloping area forms the Thar or Great Indian Desert. South-east of the Aravalli Range there is an upland country which may be called the Rajput Upland.

The Thar Desert is a vast area lying between the Aravalli Hills and the plain. It is a sandy waste, interrupted by bare rocky hills and waterless valleys. The ground is often entirely bare, but in some places there may be a few shrubs or fleshy plants. The rainfall is generally less than 10 inches, and is very irregular, falling mainly during storms. Although the rainfall is greater than in the rich Indus Valley, the land remains a desert because there are no large rivers which can be used for irrigation. The desert is almost uninhabited. Villages may spring up where there is a little water, and some millet can be grown; but when the water supply fails, the village has to be abandoned. Many people own camels, and trade across the desert. *Jaisalmer* is a centre of the camel caravan routes. *Bikanir* is noted for its manufactures of camel-hair goods and cotton goods. Throughout history the desert has formed a great barrier to the movement of man.

The Rajput Upland Region, as a whole, is a dry region, receiving less than 40 inches of rain, but in the damper and more sheltered parts forests can grow. Most of the area consists of old crystalline rocks, but in the south there are great sheets of Deccan Lava. Owing to the irregular rainfall, the region is thinly populated. The staple food is millet, and much gram is grown for fodder. Agriculture is bad, and so more people earn their living by industry than in other parts of India. Woollen goods, especially blankets, are made from the wool of sheep and goats in many places. In the drier parts, bordering the Thar Desert, camel hair is used for carpets, etc.

Ajmer is a large town with railway workshops, food and textile industries. It is also situated on an important railway. *Jaipur* is larger than Ajmer, but is getting smaller. *Jodhpur* is another large town.

The other towns in Rajputana, such as Udaipur, owe their importance usually to their being capitals of states.

THE CENTRAL INDIA AGENCY

The Central India Agency is a federation of native states lying in Central India. The most important is Gwalior. The states form two blocks of country, separated by a portion of the United Provinces. The western half lies in the Rajput Upland Region ; the eastern half lies in the Central Indian Foreland.

In the western half *Indore* is the largest town and is an industrial centre. *Bhopal* has few industries, and is getting smaller. *Lashkar* and *Ujjain* have cotton factories. The town of Gwalior is on the borders of the Ganges Valley.

The Central Indian Foreland, including the regions known as Bundelkhand and Baghelkhand, lies between the Central Indian Highlands and the Ganges Plain. The rainfall is about 40 inches ; millet and cotton are the most important crops. The eastern part is damper and is watered by the Son River.

BURMA

Burma is the largest of the Provinces of India, and in most respects it is quite different from the rest of the Indian Empire. It is shut off from India by a wall of mountains over which there is no railway nor proper road, so that Burma can only be reached from India by sea. The people who inhabit Burma are Mongolians, more closely allied to the Chinese than to the Indians. In the province are the numerous native states collected together as the Federated Shan States, as well as certain hilly tracts which are not administered at all.

Physical Features.—The important feature of the mountain ranges and the rivers is that they both run from north to south. The River Irrawaddy is navigable by river steamers as far north as Bhamo, nearly 1,000 miles from its mouth. Its big tributary, the Chindwin, is also navigable for several hundred miles. Some of the smaller tributaries can be used by small boats, but they are more important for floating logs of timber from the forests to the main river. The Salween is only navigable by steamers for about 80 miles, when it passes through a gorge with rapids. The coasts of Burma are quite different from those of India. Both the Arakan and Tenasserim coasts are rocky and fringed with numerous islands.

Geology.—The Arakan Yomas and the Pegu Yomas are two fold ranges of young rocks. Between the two lies an area of young soft rocks, little folded, forming the valley of the Chindwin and the Lower Irrawaddy. It is here that the great oil fields of Burma are found, and Burma produces about 270,000,000 gallons of oil every year. The wild mountainous eastern half of the province—that is, the Shan Plateau and its southward continuation into Tenasserim—consists of old hard rocks. In the north rubies and other precious

stones are found at Mogok, but the mines are not so important as they used to be. At Bawdwin is one of the largest deposits of silver and lead ore in the world. The ore is smelted near by at Namtu.

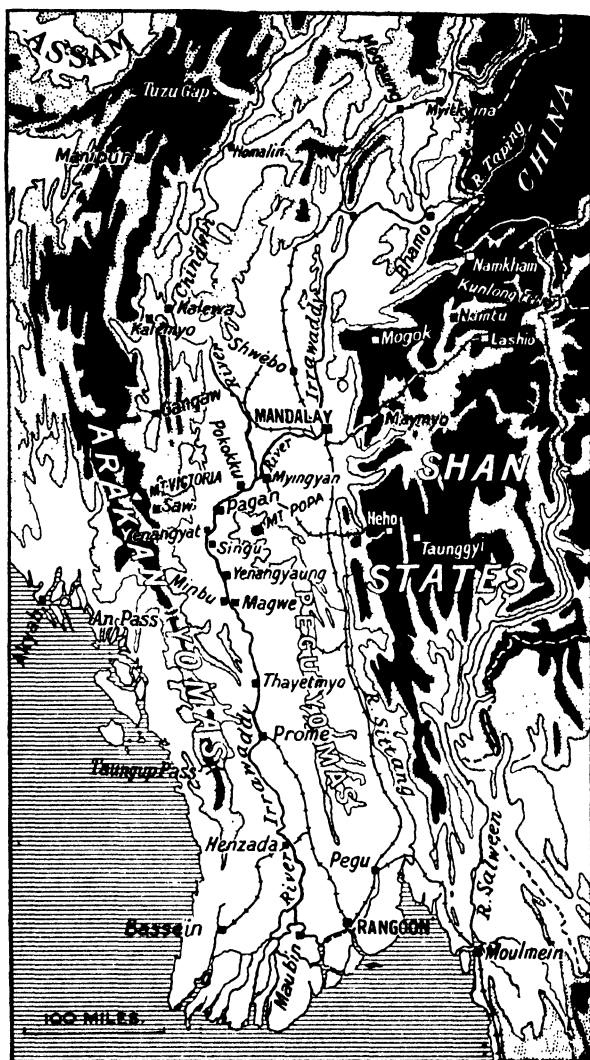


FIG. 52.—General map of Burma.

There are big deposits of silver and lead ore near Heho, farther south. Tenasserim has rich deposits of tin, especially around Tavoy, and with the tin is found wolfram. There are numerous deposits of poor quality coal in Burma, but they are not yet mined.

Climate.—The important feature about the climate is the "Dry Belt" of Central Burma, which lies in the rain-shadow of the Arakan Yomas and receives less than 40 inches of rain a year. All the coastal region receives a very heavy rainfall. Central Burma is very hot in the hot weather owing to the absence of clouds and the cooling influence of rain, as well as distance from the sea.

Vegetation.—Burma is less thickly populated than most parts of India, and so natural vegetation still covers a very large part of the country. Where the rainfall is more than 80 inches, evergreen forests are found, but the valuable forests of Burma occur where the rainfall is between 40 and 80 inches. It is here that the monsoon forests with teak, pyinkado, in, ingyin, and other valuable timber trees are found. Teak is very rarely found by itself. It is nearly always mixed with many other trees. The teak forests are found on the Pegu Yomas, the eastern slopes of the Arakan Yomas, and the hill ranges north of the Dry Belt. Some teak is also found on the Siamese border, and is floated down the River Salween to Moulmein. The drier parts of Burma are covered with scrub land, whilst the hills and plateaus above 3,000 feet are clothed with evergreen oak forests together with some grass land.

The cultivated land is found mainly on the broad stretches of alluvium which border the rivers and build up their deltas. People of the hills merely grow enough for their own needs on small clearings in the jungle near their villages. The great food grain of Burma is rice, which occupies two-thirds of all the cultivated land in the province. In the Dry Belt sesamum, millet, beans, ground-nuts, and cotton are grown.

Population.—Although Burma is the largest Province of India, it has only 13,000,000 people. Over 11,000,000 of these are Burmans, and they live mainly on the fertile alluvial lands by the rivers. They are all Buddhists by religion, and have no caste system; in most respects men and women have equal rights.

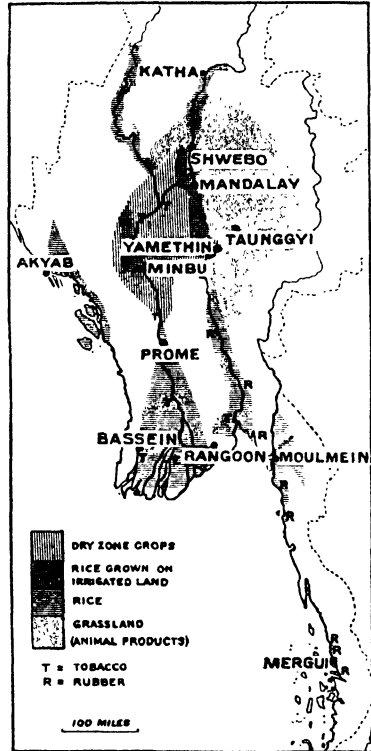


FIG. 53.—The crops of Burma.

The hilly regions and the plateaus are inhabited by more backward people, such as the Chins of the Arakan Yomas, the Karens of the Pegu Yomas, the Shans, Palaungs, and the Was of the Shan Plateau, and the Kachins of the north. They number about a million. Then there are nearly a million Indians of all sorts who have settled in

Burma.

Natural Regions.—

Burma falls very simply and naturally into seven natural regions.

The Arakan Coastal

Strip forms a narrow tract of land between the mountain wall and the Bay of Bengal. It is broadest in the north and gets narrower towards the south. It is almost everywhere hilly; only in one place is there a stretch of flat land. The coast is rocky, and there are numerous inlets and islands. The rivers are for the most part short rushing torrents from the mountains. Only one-tenth of the land is cultivated, one-half is waste land, and the remainder is covered by evergreen forest or bamboo jungle. Some, but not all, of the waste land might with difficulty be cultivated. The region catches the full force of the south-west monsoon, and all parts get a heavy rainfall—not less than 100 inches. By far the most important crop is rice. Most of the people live on the flat land which lies near the town of Akyab.

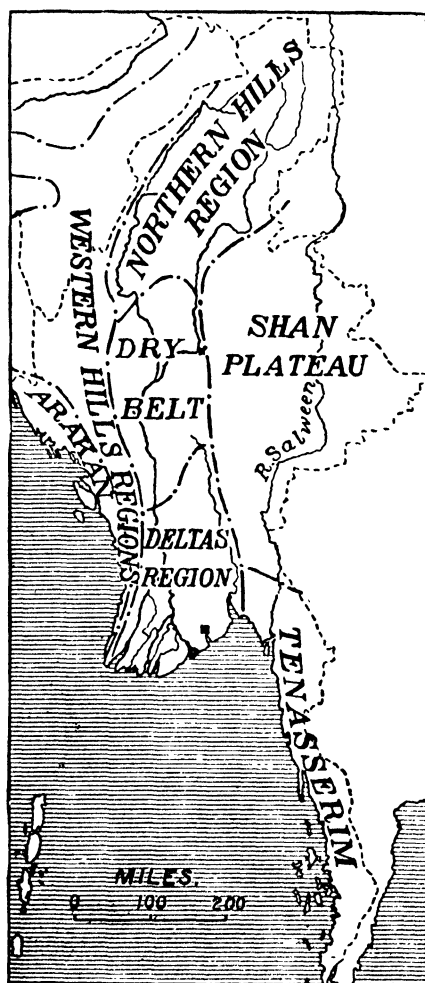


FIG. 54.—The natural regions of Burma.

Akyab has a good harbour, but is only a small port because it has a small hinterland backed by high mountains. Some fishing is carried out along the coast. The only easy way between Arakan and the remainder of Burma is by sea.

The Tenasserim Coastal Strip also forms a narrow tract of

land, between the Siamese border and the Gulf of Martaban. In many respects it is like the Arakan coast. It is nearly everywhere hilly or mountainous: only in the north, around Moulmein, is there a stretch of flat land. The country is formed largely of ranges of hills running north to south and consisting of granite. Where the granite masses reach the sea they form rocky islands. Between the granite ranges is lower land consisting of old but softer rocks which have been worn away near the coast to form low islands or mangrove swamps. A large part of the region is covered with dense evergreen forests of equatorial type. Everywhere the rainfall is more than 100 inches, and often more than 200. Rice is again by far the most important crop. Rubber plantations cover a considerable area. Less than one-tenth of the area is cultivated. The majority of the people live around the old port of *Moulmein*, but the harbour is becoming choked by mud brought down by the Salween and is not suitable for large ships. *Tavoy* exports the tin which is mined in the district. Farther south is *Mergui*, which may become an important port, because it is proposed to construct a railway from Mergui across to Siam. From the west bank of the Salween, opposite to Moulmein, there is a railway to Rangoon.

The Western Hills Region consists of a series of parallel ranges, sometimes rising, as in Mount Victoria, to 10,000 feet. The hills are difficult to cross, and there are only a few difficult mountain paths from one side to the other. The region is clothed mainly with a poor evergreen oak forest, of very little value. In places there are pine forests, but the forests are economically inaccessible. Large parts of the region are practically uninhabited. The few Chin inhabitants lead a miserable existence by growing a few crops on hillside clearings.

The Shan Plateau is a broad area of old hard rocks, mostly 3,000 feet above sea-level, but deeply entrenched by the deep, narrow Salween Valley, and by other river valleys. The western border is well marked, and the land drops rapidly to the level of the Irrawaddy and Sittang Valleys. The plateau receives a moderate rainfall and a large area of the waste land might be cultivated, but the land is very sparsely populated, and the various hill tribes are not very progressive. There are also considerable areas of grass land suitable for sheep, goats, and cattle. Two railways penetrate into the plateau; one from Mandalay to Lashio. Near this railway, and connected with it by a narrow-gauge line, are the Bawdwin Mines and Namtu Smelting Works. To the north of the Shan Plateau lies the most important of the routes from Burma to China—along the Taping Valley through the town of Bhamo.

The Northern Hills Region.—This region stretches from the mountain wall which separates Burma from Assam and Tibet, as far southwards as the borders of the Dry Belt. To the west of the

region lies the valley of the Chindwin ; in the east the valley of the Irrawaddy. In the north the country is wild, inhabited by a few Shans and Kachins. The famous jade mines of Burma are in this region, and the jade is sent to China through Bhamo.

The Dry Zone is, next to the Deltas Region, the most important region of Burma. It is, generally speaking, a plain, and in the centre lies the isolated peak of Mount Popa, nearly 5,000 feet high. Mt. Popa is an old volcano, and lies at the northern end of the Pegu Yomas. The Dry Zone may be defined as the region of Burma which receives less than 40 inches of rainfall. In the centre the rainfall is as low as 20 inches. It is too dry for the proper growth of forests, and the natural vegetation is a poor scrub. One of the small trees is cutch, from which a yellow dye is made. Although it is so dry, there is a good population in the Dry Belt. Some parts, especially south of Mandalay, are irrigated and rice is grown : in other parts the typical Dry Zone crops—sesamum, millet, beans, ground-nuts, and cotton. The great oil fields of Burma are situated in the Dry Belt. The most important are Yenangyaung and Singu. Most of the oil is sent by pipe line direct to the refineries at Rangoon. The Dry Belt is the natural centre of Burma, and from it all parts of the country are easily reached, especially by the Irrawaddy, which forms the great highway. So we find the old capitals, such as Mandalay and Pagan, are in the Dry Belt.

The Deltas Region comprises the most important part of Burma. It consists of the broad valley of the lower course of the Irrawaddy and its large delta, and the narrower valley of the Sittang and the much smaller Sittang delta. Separating these two alluvial plains is the low range of the Pegu Yomas, covered with valuable forests. Rangoon is situated at the southern end of the Pegu Yomas, and so commands both valleys. The rainfall is good, over most of the true delta it is more than 80 inches, but decreases northwards. At the southern end of the Pegu Yomas evergreen forest is found, but farther north is monsoon forest of teak, pyinkado, and other valuable trees. It is the nearness of these forests to Rangoon and the sea which has made them specially important. The lower, alluvial lands are almost entirely cultivated, and by far the most important crop is rice. This part of Burma is thickly populated, except in the forests. The cultivators are mostly Burmans. The towns of the region are mostly collecting centres for rice—examples are Henzada, Bassein, Maubin, Pegu. Notice how well Rangoon is situated, so that it can collect and export the produce of nearly all parts of Burma.

Communications of Burma.—The River Irrawaddy and its tributary the Chindwin are still the most important highways of Burma. Small boats can use many of the smaller streams, and where the small streams join the main river, ports often spring up.

Many of the creeks of the Irrawaddy Delta can be used by quite large steamers, and two canals have been cut to make the journey across the delta from Bassein to Rangoon shorter. The rice grown in the delta is brought to Rangoon by "paddy boats" through the delta creeks. Many of the small streams of Burma are used for floating logs of timber from the forests to the saw-mills. The railways of Burma are all metre gauge. The main line does not run up the Irrawaddy Valley, but up the Sittang Valley to Mandalay. A ferry there connects it with the continuation which runs to Myitkyina. Another line from Rangoon runs to Prome on the Irrawaddy, but the big oil fields and many towns of the Dry Belt can only be reached by river. Burma has very few roads. The roads which exist are small local roads, and there is not even a main road between Rangoon and Mandalay. Three important roads penetrate the Shan Plateau—one to Mogok, one to Maymyo, and one to Taunggyi.

The Trade of Burma.—Burma has three main exports—rice, petroleum and its products, and teak. Much less important are cotton, lead, silver, etc. More than one-third of the exports of Burma go to India. Much of the rice is used to feed India and Ceylon. As with the other parts of India, the imports of Burma are cotton goods (from India, Great Britain, and Japan), machinery (from Great Britain and United States), and coal. Most of the trade of Burma passes through Rangoon (86 per cent.). The minor ports are Akyab, Moulmein, and Bassein. There is a small overland trade between Burma and China (through Bhamo) and between Burma and Siam.

CEYLON

Position.—Ceylon is a pear-shaped island about 25,000 square miles in area, situated to the south of Peninsular India, with which it is structurally comparable, and must once have formed part of the same mass. It is farther south than any part of India or Burma, and Colombo is only 7° N.

Physical Features.—Ceylon consists of a central mass of mountains, surrounded by broad coastal plains. Many of the central mountains are high, the highest being more than 8,000 feet. In the north the coastal plain is flat and there are several sandy peninsulas. The end of the Mannar peninsula is only 22 miles from the nearest point of India (Dhanushkodi). Ceylon is very nearly joined to India between these two points by a line of sandbanks and rocks called Adam's Bridge.

Geology.—The mountains of Ceylon consist of the same old, hard, crystalline rocks as the Deccan. These rocks also underlie the coastal plain, but there they have been covered by a thick coat

of *laterite*, a rock formed in hot, wet countries with alternating dry and wet seasons. Laterite is a soft red or brown rock which hardens

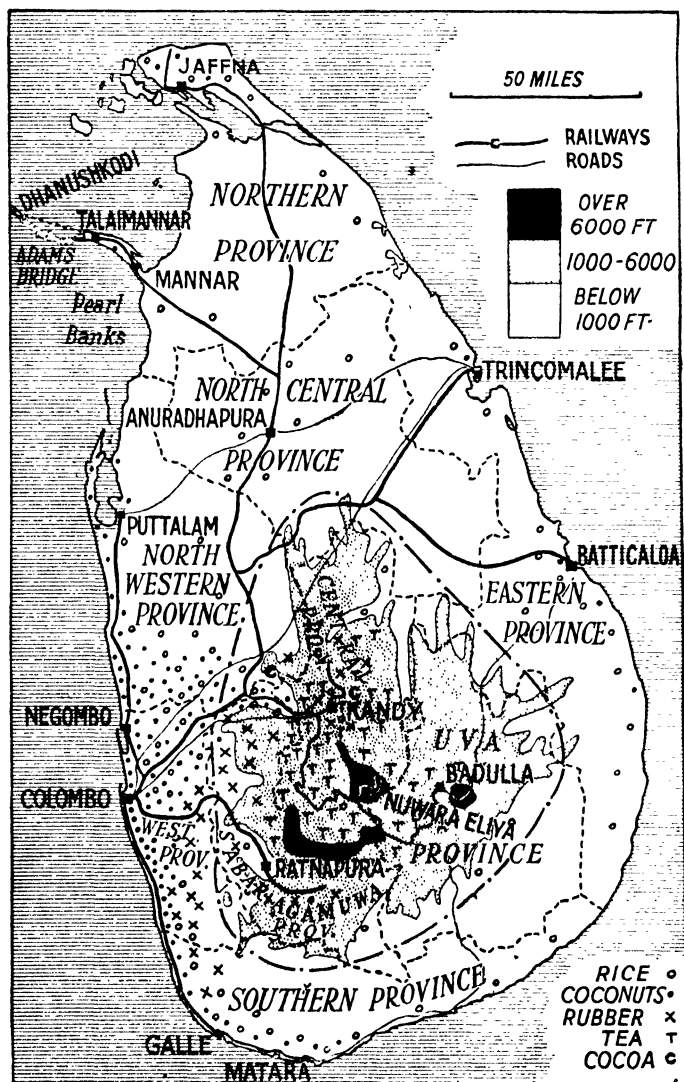


FIG. 55.—General map of Ceylon.

Each dot or symbol for rice, coconuts, rubber, etc., represents 10,000 acres.

on exposure, and has a cellular texture like a coarse brick. In the north of the island the old rocks have been covered by soft limestone. Round the island there are many sand-dunes. The old, crystalline

rocks of Ceylon are noted for their beautiful gemstones and for their mineral graphite.

Climate.—Ceylon is nearer the equator than any part of India, and has almost an equatorial climate. The daily range of temperature is very small; at Colombo it is only 12 degrees. The annual range is also very small. January is the coolest month (80 degrees), and May the hottest, but at Colombo there is only a difference of 5 degrees between the two. Ceylon gets its rain from both the north-east and south-west monsoon. There is a heavy rainfall on the west and south-west coasts and the mountains from the south-west monsoon, and also a heavy rainfall on the north-east coast and eastern slopes of the mountains later in the year from the north-east monsoon. The northern part of the island has no hills to intercept the winds, and is a dry region. So also is the south-eastern part of the island. Thus, despite the small size of Ceylon, it has a varied climate.

Vegetation.—Just as the climate of Ceylon varies a great deal, so does the natural vegetation. The lower slopes of the mountains used to be covered with thick evergreen forest, but are now largely cleared for rubber plantations and tea gardens, and there is little timber of value left. The wetter parts of the lowlands were also covered with wet evergreen forests, and the drier parts with scrub forests. A great part of the wetter land is now used for rice and coconuts, but the drier parts are still untouched.

Taking the whole of Ceylon, about one-fifth is cultivated. Thick forests cover about one-fifth of the area, and there is a large amount still covered by waste land which might be used.

Population.—There are rather over $4\frac{1}{2}$ million people in Ceylon. The principal race is the Sinhalese or Ceylonese, who, between 2,000 and 3,000 years ago, came from the north of India and conquered Ceylon. The Sinhalese are Buddhists by religion. At Kandy is the Temple of the Tooth, where a tooth of Buddha is preserved, and which is one of the most sacred places in the world to Buddhists. The north of Ceylon is inhabited mainly by Tamils, who are Hindus by religion, and who came over from India either as conquerors in past ages, or more recently as labourers in the tea gardens, coffee and rubber estates. The Moors are Mahommedan traders, boatmen or fishermen who came originally from North Africa. The descendants of the old Portuguese and Dutch settlers are called Burghers. In the wilder parts of the mountains there are still a few Veddas, a very primitive hill tribe. The people live mainly on the wetter parts of the plains and on the hills. On the dry, infertile soils of the northern regions and the east there are very few people.

Government.—Ceylon is entirely separated from India in matters of government. The first Europeans to settle in the island

were the Portuguese in 1505, followed by the Dutch, and later by the English. The old Dutch ports are still to be seen at Galle and other places. Ceylon was separated from the Presidency of Madras in 1802 and made a Crown Colony, and so became a separate country of the British Commonwealth. It is ruled by a Governor and an Executive Council, with a Legislative Council mainly elected by the people.

Natural Regions.—Ceylon, though only a small country, must be divided into at least three natural regions :—

(1) The Hill Country, comprising the central mountain mass of the island, roughly the land over 1,000 feet.

(2) The Maritime Belt, or Coastal Plain of the east, south, and west.

(3) The Northern Limestone Plain, occupying the northern end of the island.

The Hill Country consists of a series of ridges, separated by deep valleys, running roughly from north-east to south-west. Very little is now left of the vast forests which covered this region before the days of European planting. The trees are nearly all evergreen, and get smaller the higher one goes, so that above 5,000 feet the trees are too small to be useful as timber. At intervals there are broad, marshy or grassy plains, like that of Nuwara Eliya and the Horton Plains, surrounded by mountains. The rainfall of most of the region is heavy ; the rain does not fall so heavily as on the plains, but is more continuous, and for days, or even weeks together, the sun may be hidden by dense clouds of mist. The greater part of the rain falls during the south-west monsoon, from June to October. Most of the rubber plantations are found in this region, especially on the western side, as well as nearly all the tea gardens. The latter are most numerous between Kandy and Nuwara Eliya. North and north-east of Kandy the cacao tree is grown, from which cocoa is obtained. Many of the valley sides are steep, but are very carefully terraced for the growth of paddy. A large amount of coffee used to be grown in Ceylon, but, as in South India, it is no longer important.

The old hard rocks which make up the mountain country are famous for gemstones, sapphires, spinel rubies, moonstones, etc. There are hundreds of small gem-quarries, especially where the gems have been washed out of the old rocks and into the gravels of the valleys, as around Ratnapura. Another important mineral is graphite, used for making lead pencils. The most important mines are in the Kurunegala district.

Kandy, the old capital, is in this region, and is reached by a wonderful hill railway from Colombo, 72 miles away. Nuwara Eliya is a well-known hill station.

The Maritime Belt is a broad belt below 1,000 feet, lying round the central mountain core. Over this stretch the old hard rocks are hidden by deep red soil of laterite. All along the coast, thrown up by wind and waves, there are lines of sand dunes. Just as on the west coast of India, large brackish lagoons are found behind the sandy ridges. The climate of the maritime belt varies greatly. The western and south-western sides get a heavy rainfall from the south-west monsoon, the south-eastern side is dry, whilst the eastern side is again wetter, receiving its rain largely in November and December from the north-east monsoon. The wet low country is thickly populated and widely cultivated, especially on the west and south-west of the island. The level lands and the

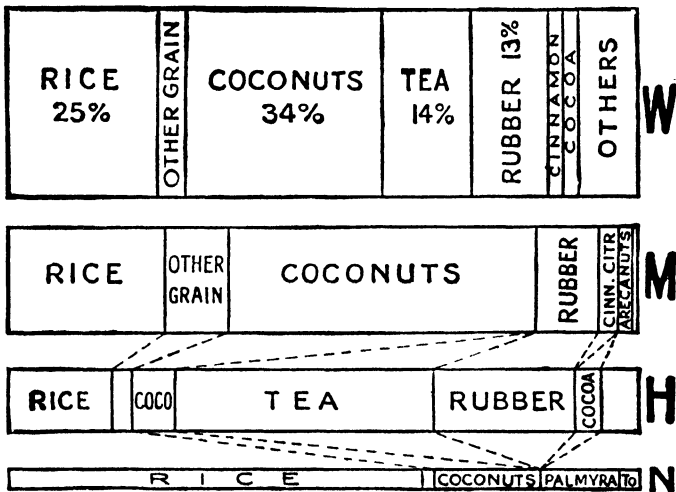


FIG. 56.—The crops of Ceylon.

W = the crops of the whole of Ceylon.
M = the crops of the Maritime Region.
H = the crops of the Hills Region.
N = the crops of the Northern Region.

valleys are occupied by rice fields, yielding two crops a year, one after each monsoon. The higher lands towards the hills are covered by the mixed tree cultivation of the Sinhalese. Each farmer has coconuts, areca nuts, mangoes, breadfruit, together with yams and small plants like pepper. On the borders of the hill country are rubber and tea plantations. All along the coast are groves of coconuts and industries connected with the coconut find employment for a large number of people. The kernels are roughly dried for export as copra; even more important is the export of carefully dried or "desiccated coconut" prepared in factories; there are also factories for the preparation of coconut oil. The preparation of coir is mainly a cottage industry. Areca nuts are also grown for

export. Of the spices for which Ceylon has long been famous, cinnamon is the most important. The cinnamon tree likes a very light sandy soil, and grows in those parts of the maritime belt where such a soil is found. The industry is less important than formerly. The cinnamon of commerce is obtained from the inner bark of young shoots. Other spices are cardamoms, cloves, etc. Citronella oil, prepared from a grass, is obtained mainly in the south-west of the island. The parts of the maritime belt away from roads and railways, especially in the dry parts of the south-east and in the east, are very thinly populated, and there is much waste land. The railway across the island to Trincomalee, opened in 1925, with a branch to Batticaloa, should do much to open the east coast. Round the coast fishing is an important industry.

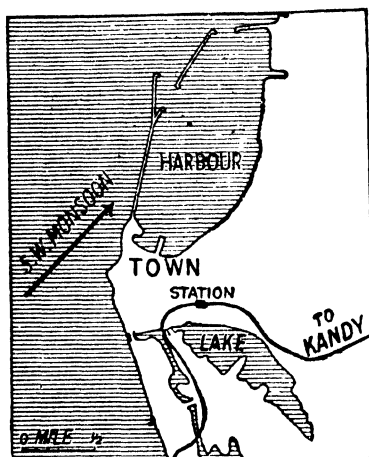


FIG. 57.—Sketch-map of Colombo Harbour, showing how it is protected from the South-West Monsoon.

The capital of Ceylon—Colombo—is on the west coast, where a shallow bay afforded some shelter from the force of the south-west monsoon. Now a fine breakwater encloses an artificial harbour, and Colombo is not only the principal port of Ceylon, but a great entrepôt port also. Before the harbour of Colombo was finished, Galle used to be the principal port of call. It has a pretty natural harbour, but one with an exposed and dangerous rocky entrance, guarded by an old Dutch fort. Trincomalee on the north-east coast, has a fine large

natural harbour, but its hinterland is not important and the port is little used.

The Northern Plain covers the whole of the north of Ceylon, and does not rise more than 200 or 300 feet above sea-level. The plain is formed in the north by a pale limestone, covered by a thin bright red soil. Round the coast are sand dunes. Most of this region gets about 40 inches of rain, but the soil is dry and poor, and there is much waste land covered with scrub jungle. The palmyra palm flourishes in this northern region. Cultivation is protected by numerous "tanks," mostly very old. Jaffna, situated on the Jaffna peninsula, is the most important town in this natural region. At the end of the Peninsula of Mannar is Talaimannar, the terminus of the Ceylon Government Railways, where steamers run daily to Dhanushkodi, 22 miles away, the terminus of the South Indian

Railway. South of the Mannar Peninsula is an area of shallow sea (the Gulf of Mannar) famous for its pearl fisheries.

Communications.—Colombo is the centre of the broad-gauge Ceylon Government Railways. One line runs southwards along the coast to Galle and Matara, whilst the main line runs north-eastwards through the old historical town of Anuradhapura to Jaffna, with a branch to Talaimannar. Another line runs from Colombo up to Kandy, and winds amongst the hilly country to Badulla, with a small branch to Nuwara Eliya. There are numerous excellent roads in Ceylon which link up outlying places with the railways.

TEA	RUBBER	COCONUT PRODUCTS	OTHERS
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FIG. 58.—The exports of Ceylon.

The Trade of Ceylon.—In value the trade of Ceylon is roughly the same as that of Karachi or Rangoon. Nearly all the trade passes through the great port of Colombo.

Ceylon has three main exports (see Fig. 58)—tea, coconut products, and rubber; others include areca nuts, citronella oil, cacao, and cinnamon. Although Ceylon has not a very large population,

RICE	COTTON GOODS	COAL	SUGAR	OTHERS
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FIG. 59.—The imports of Ceylon.

it does not grow enough food for its people, and imports much rice, especially from Burma. The other imports are similar to those of India.

SOUTH-EAST ASIA AND THE EAST INDIES

Position of Area.—Lying between the compact, densely-populated lands of India and China is the broad peninsula of Indo-China, occupied by British Indo-China (Burma) and French Indo-China with the independent kingdom of Siam sandwiched between the two. This broad peninsula is prolonged southwards in the narrow Malay Peninsula, at the tip of which the island of Singapore reaches almost within a degree of the Equator. Except for the extreme north of Burma the whole area lies south of the Tropic of Cancer, but no part of the mainland of Asia actually reaches the equator. Occupying a wide area to the south and east of the Malay Peninsula are the East Indies. The archipelago stretches over the whole area between Asia and Australia, and includes some of the largest islands in the world (Borneo, New

Guinea, and Sumatra). Yet if one excludes the Philippine Islands, practically the whole of the East Indies lies within eight degrees of, and on either side of, the Equator.

Structure and Physical Features.—Structurally Indo-China, Malaya, and the East Indies should be considered as a whole. There is a central core of old rocks, part of which has already been mentioned in connection with the Shan States and Tenasserim, Burma. This occupies the whole of Siam, French Indo-China, Malaya, and part of the island of Borneo. But just as the alluvial

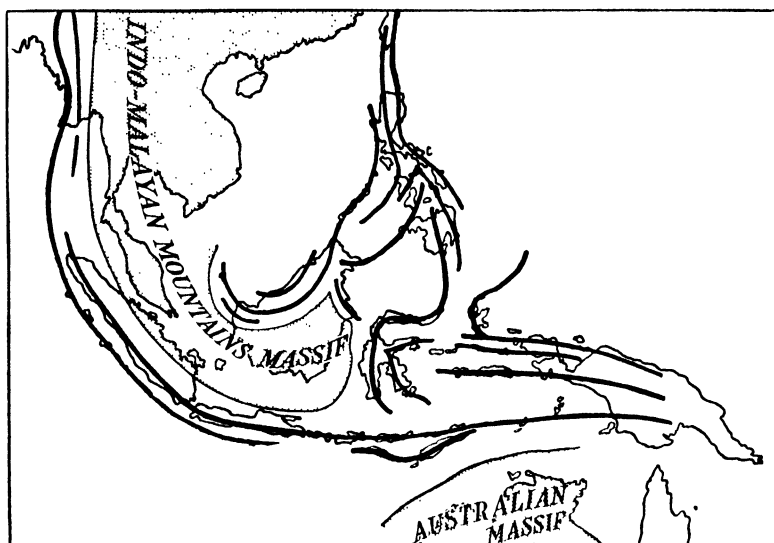


FIG. 60.—The major tectonic features of the East Indies. The heavy black lines are the main fold lines.

(After Brouwer, Warren D. Smith and J. W. Gregory.)

plains of the Ganges overlie the ancient rocks of the Peninsula, so the old rocks of Indo-China are in places hidden beneath wide stretches of alluvium. Alluvium makes up the Menam plain in Siam and the lower Mekong plain in French Indo-China. There are also some small basins, once occupied by lakes, now important because some of them contain seams of coal. Among the older rocks the most important are the numerous intrusions of granite—usually elongated in a north-south direction—important because of the rich deposits of tin ore associated with their margins. South-East Asia supplies two-thirds of the world's output of tin—from Malaya, two small islands off the Dutch East Indies, Siam, and China.

Around this central core is a succession of Tertiary fold ranges, of approximately the same age as the Himalayas. These ranges

form a series of curvilinear "festoons," some partly submerged so that they form merely lines of islands. Volcanic cones are associated with most of these lines and a number of volcanoes are still active.

Climate.—Broadly speaking, there are two main climatic zones :

(a) The *Equatorial Belt* stretching from about 8° N. to 8° S., and hence including all the East Indies (except the Philippines) and Malaya.

(b) The *Tropical Monsoon Belt*, lying to the north and including all Indo-China and the Philippines.

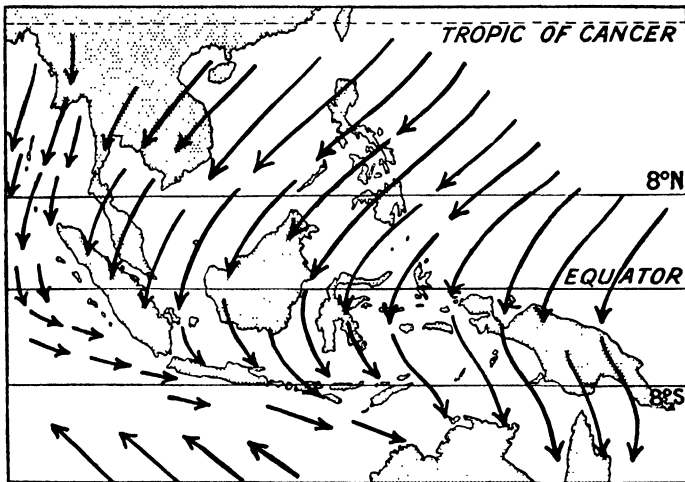


FIG. 61.—Prevalent winds in S.E. Asia and the East Indies in January.

In the *Equatorial Belt* there is the usual high average temperature throughout the year—ranging from about 78° to 81°. Whilst much of the rainfall is convectional, the East Indies lie within the sphere of influence of the monsoons, each blowing for half the year. Thus most stations have two rainfall maxima, the chief rainy season depending on the aspect of the station. On the northern sides of the islands the rainfall reaches a maximum about January or February; on the southern sides in July and August. In the *Tropical Monsoon Belt* the seasons are broadly the same as those in India, except that the east coasts of Indo-China and the Philippines, exposed to the winter monsoon, have a considerable rainfall in October, November, and December.

The Pacific Typhoon belt affects the northern part of the Philippines and curves away northwards.

Vegetation.—The natural vegetation of the Equatorial belt is hot, wet, evergreen forest, which often stretches in an unbroken

sweep from the sea-shores to the highest hills. Indeed, there is little change in the forest until heights of over 5,000 feet are reached.

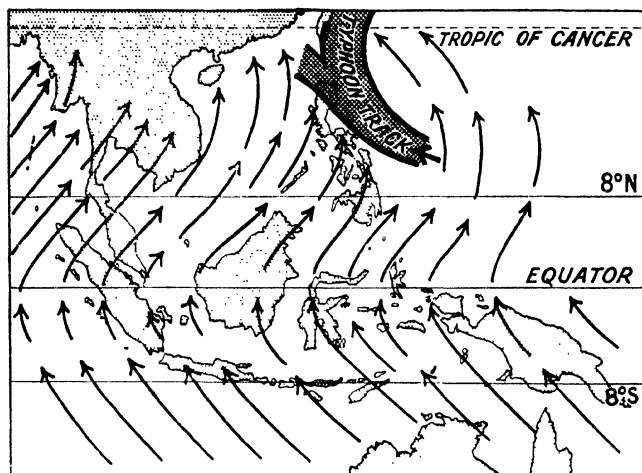


FIG. 62.—Prevalent winds in S.E. Asia and the East Indies in July.

These Asiatic forests are not, however, of the gloomy, vault-like type found in the Amazon Basin, but extraordinarily attractive,

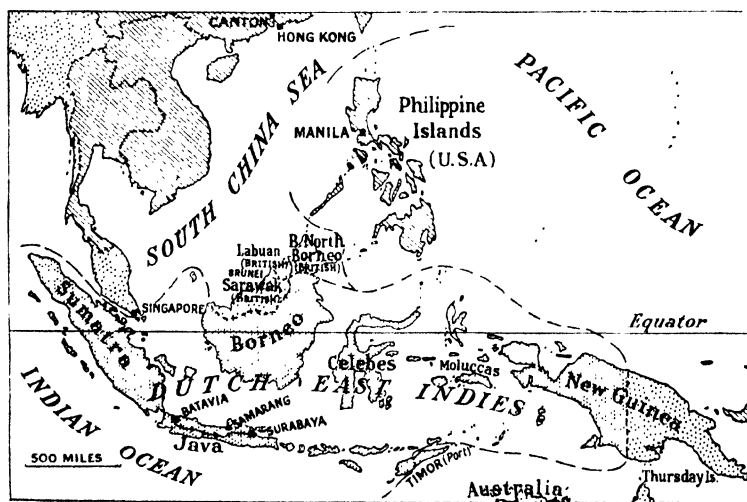


FIG. 63. Political spheres of influence in S.E. Asia and the East Indies.

with little shafts of sunlight penetrating to a floor richly carpeted with vegetation. In the Monsoon belt there is the same range of vegetation as that described under India.

Population and Development.—South-Eastern Asia offers some extraordinary contrasts in population and development. The Indo-Chinese Peninsula as a whole is a potentially very productive but distinctively under-populated area, situated between two of the most densely peopled agricultural lands in the world—India and China. The western sides (Burma and part of Malaya) are being peacefully invaded by Indian immigrants; the remainder by Chinese immigrants in enormous numbers. This applies also to Malaya. The East Indies supply curious contrasts in the development of equatorial lands. There is Java with its productive soils, intensive cultivation, dense, progressive population, and extensive foreign trade. Contrasted with this, much of Borneo and New Guinea is sparsely populated with primitive head-hunting tribes who have scarcely reached the stage of civilization when agriculture becomes of importance.

Political Geography.—The British sphere of influence in Indo-China (Burma) has already been considered. Britain also controls Malaya and the northern parts of Borneo; France the eastern side of Indo-China. The greater part of the East Indies forms the Dutch Colonial Empire. Portugal retains half of the small island of Timor; whilst the Philippine Islands passed from Spain to the United States in 1899. These spheres of influence are shown in Fig. 63.

SIAM

Position and Size.—The independent kingdom of Siam has an area of slightly over 200,000 square miles, with a population of approximately 10,000,000. The country is called by its inhabitants “*Thāi*,” meaning “the Kingdom of the Free,” and it is to-day the only part of south-eastern Asia remaining independent of European Powers.

Natural Regions.—Geographically Siam falls naturally into four main divisions, shown in Fig. 64: Northern, Central, Eastern and Southern Siam.

Northern Siam, over a quarter of the country, consists of a series of hill ranges and valleys trending north and south. The thickly-forested hills gradually increase in height towards the west and north, that is, towards the borders with Burma and French Indo-China. The valleys in the north are only narrow, forested gorges, but southwards become broad, open, cultivated tracts, and afford some of the most valuable agricultural land in the kingdom, and it is here that the bulk of the population of Northern Siam is found. The four principal streams draining this region unite in the south to form the Menam. The town of Chieng-mai lies in the heart of the region and is connected with Bangkok by rail.

Central Siam, of about the same area, consists almost entirely of one vast plain, stretching from the mountains on the borders of Burma on the west to the ridge which divides it from Eastern Siam on the east. The plain is drained by sluggish streams, and it is liable to floods, hence, despite its fertility, only a quarter is at present under cultivation. Drainage and a larger population

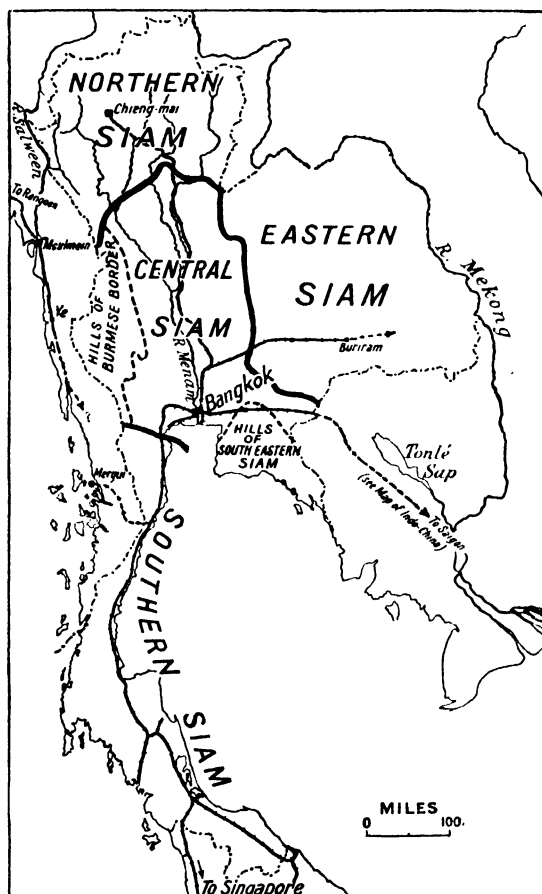


FIG. 64.—Siam : natural regions.

are the only factors necessary to make Central Siam one vast rice-field, and projects have already been undertaken towards this end. Bangkok, the capital of Siam, is the port and outlet for the whole region.

Eastern Siam, again of about the same area, is a huge, shallow basin cut off by the rim of hills from rain-bearing winds and suffer-

ing not only from deficient rainfall but also from a poor soil. Hence this region is thinly populated and comparatively unimportant.

Southern Siam, a smaller area, comprises all the narrower part of the Malay Peninsula, and in places is scarcely more than a dozen miles wide. As in Tenasserim and Malaya there are north and south ranges of forested mountains, and the population is

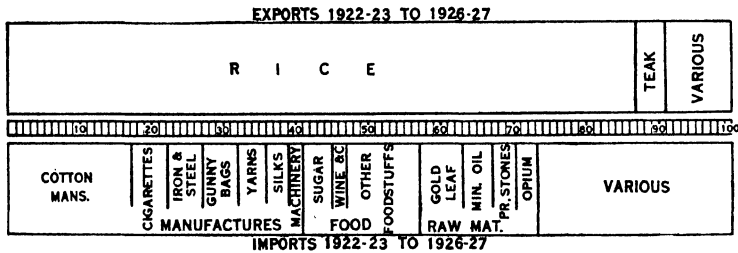


FIG. 65.—The foreign trade of Siam.

concentrated in the more open valleys and plains of varying extent, where rice is the principal crop. Tin-mining is important in this region, especially near the town of Puket. The railway now runs right through Southern Siam, connecting Bangkok in the north with Singapore at the extreme southern end of Malaya.

Development and Trade.—As shown very clearly in Fig. 65, overwhelmingly the most important product and export of Siam

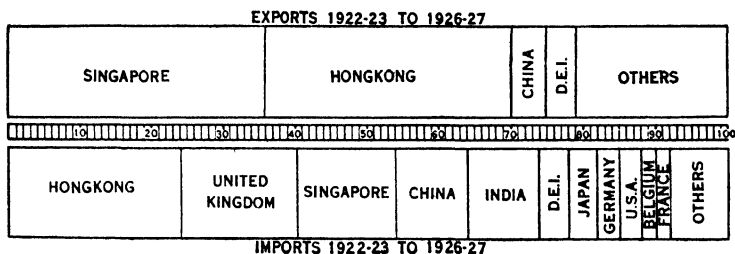


FIG. 66.—The direction of the foreign trade of Siam.

is rice. This emphasizes the comparatively small population of Siam, which permits the production of this essential food-stuff in great excess of home requirements. Rice actually covers about four million acres and the annual production is about four million tons. Second in importance amongst the exports is teak, obtained from the forests of the north-west. The logs are floated down the Menam to Bangkok, or to some extent down the Salween to Moulmein.

Amongst other occupations in Siam should be mentioned fishing. Every meal in Siam includes fish, especially in the form of "kapi,"

a strongly-smelling fish paste made of fish pounded and kneaded with salt and allowed to ferment before being dried into small cakes or stored in jars.

The great town and port of Siam is Bangkok on the River Menam, and sometimes called, on account of the numerous canals running through the city, "the Venice of the East." It will be noticed from Fig. 66 what a large proportion of the trade passes through Singapore or Hong Kong. Siam, like the countries surrounding it, is being very much affected at the present time by Chinese immigration.

FRENCH INDO-CHINA

Position and Size.—French Indo-China has a total area of more than a quarter of a million square miles and a population of about 20 millions. It is thus larger and more populous than Burma on the other side of the Indo-Chinese Peninsula.

Divisions.—The country is divided for purposes of government into five areas, which coincide in many respects with geographical units. The colony of Cochin-China and the protectorate of Cambodia include the rice-growing plains of the south; the protectorate of Annam is the great mountainous ridge of the east and its coastal strip; the protectorate of Laos is the country behind the Annamese mountains and cut off by them from the sea; whilst the protectorate of Tongking corresponds roughly with the Red River basin in the north.

Cochin-China is the great delta of the Mekong. Much is still occupied by marsh land, but two-fifths of the whole are cultivated and fairly densely populated, the bulk of the land being covered by rice-fields. The town of Saïgon, situated to the east of the delta proper, is the great port of the region, and is naturally important in the rice trade, since rice is produced greatly in excess of home requirements (compare Rangoon and Bangkok). Again the proportion of Chinese immigrants in Saïgon and the neighbouring city of Cholon is noteworthy.

Cambodia is a much larger area, forming a basin comparable in size and character with that of Eastern Siam, but rather more fertile. The land is but thinly populated, and the present production of rice, cotton, pepper, and other crops could be greatly extended. Fishing in the great lake of Tonlè Sap is very important. The principal town is Pnom-Penh on the Mekong, and is accessible by ocean-going vessels.

The *Laos Territory* is a tangle of forested hills and plateaus with valuable forests, but very inaccessible and very undeveloped.

Annam stretches for a long distance along the coast, and the most important part is the succession of small basins, separated

from one another by spurs from the main range, which reach the coast itself. The spurs make communication difficult, but the

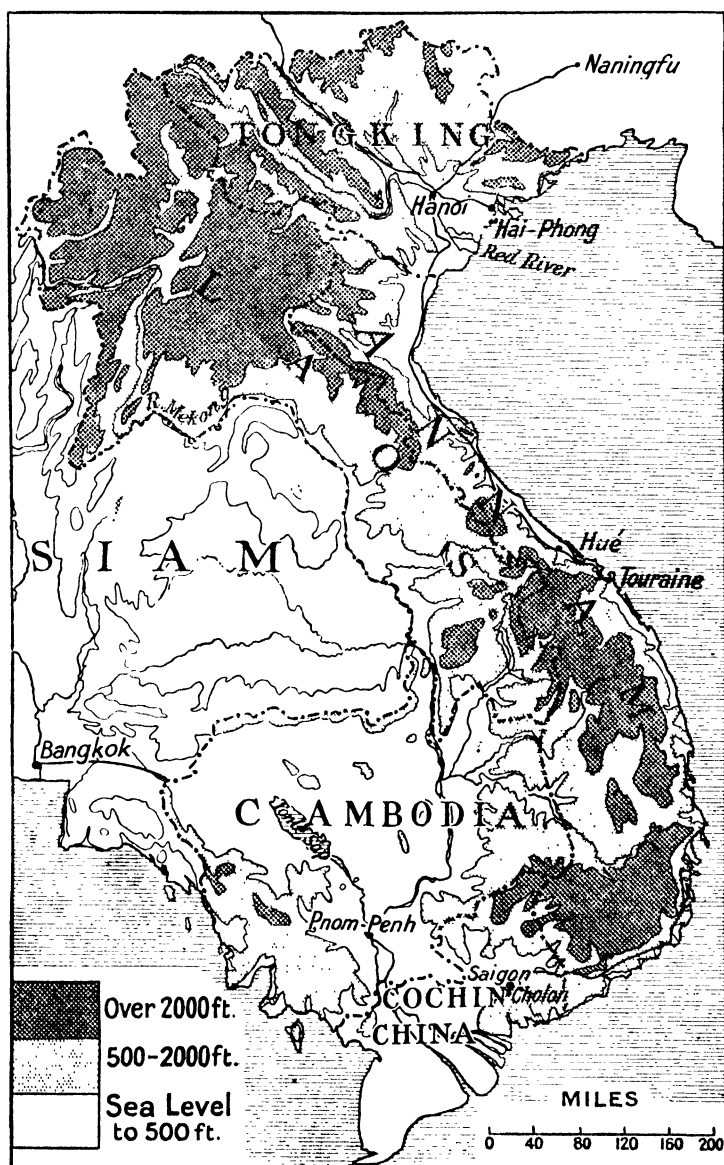


FIG. 67.—French Indo-China: physical and general map.

construction of a through railway is now being attempted. The comparatively small area of flat land and the difficulty of com-

munication have resulted in the capital Hué and its port Tourane being smaller and less important than the principal ports of the north and south. In addition to rice, the important products of Annam are silk and tea.

Tongking, a much larger area, consists of a series of broad river valleys, notably that of the Red River and its tributaries,

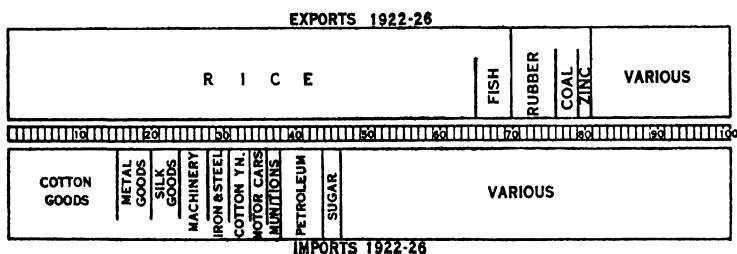


FIG. 68.—The foreign trade of French Indo-China.

separated by lofty, forested spurs from the Yunnan plateau of China. Mining is important, especially for coal and zinc, but again the chief occupation is rice cultivation, though Tongking contrasts with Cochin-China in that there is little excess available for export and little opportunity of extending the area already

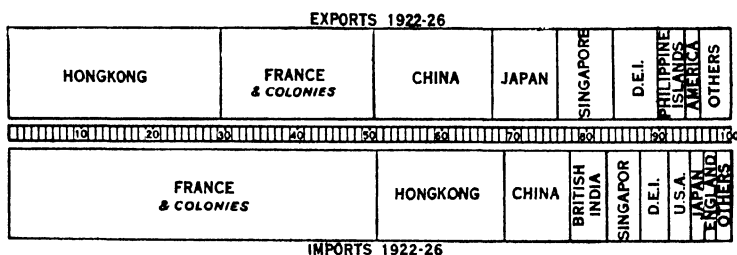


FIG. 69.—The direction of the foreign trade of French Indo-China.

under cultivation. The chief town of Tongking is Hanoi, the capital of the whole of Indo-China, and Haiphong is the principal port.

MALAYA

Introductory.—The Malay Peninsula, or Malaya, forms the south-eastern extremity of the mainland of the continent of Asia. It is the British sphere of influence in the Peninsula, and politically comprises three divisions. First, there are the Straits Settlements, a number of isolated tracts of land including the important islands of Penang and Singapore, a considerable part of the mainland, called Malacca, and several other smaller areas. Secondly, the

Federated Malay States, occupying the largest area, consist of a group of native states under British direction. Thirdly, there are some native states also under British direction, but not included in the Federation. The native states are ruled by their own Maharajah with the assistance of a British adviser, but the Straits Settlements form a Crown Colony of the British Empire administered through the Colonial Office in London.

Physical Features.—In general Malaya is hilly or mountainous, and there are few large tracts of flat ground. The main mountain divide lies near the west coast, and several parts of it rise to over 7,000 feet. Actually,

however, there is not a single well-defined central ridge, but a number of ridges roughly parallel to one another and to the coast lines. West of the main divide the country is undulating, fertile, and extensively developed, though east of the same divide it is a mass of wild, forested mountains and very much less developed. Geologically Malaya belongs to the great central core of South-Eastern Asia, and the main mountain ridges are

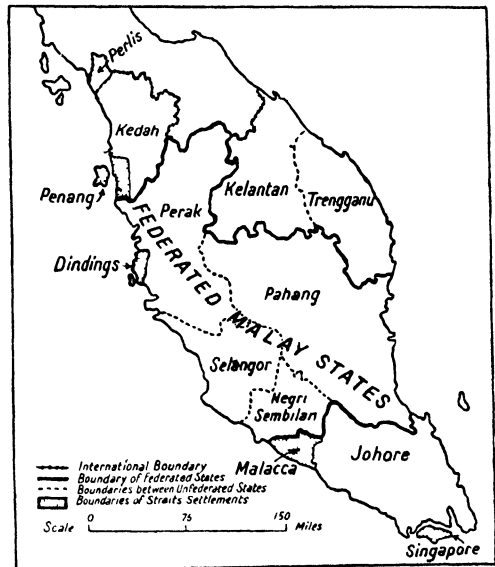


FIG. 70.—Political map of Malaya.

formed of masses of granite elongated in a north-south direction, though some of the mountains to the east are formed of quartzites and shales. On the west of the Peninsula are certain remarkable masses of limestone—remarkable because of their vertical sides, rising to heights of many hundreds of feet and in many cases riddled with fascinating natural caves. The granite masses are important because of the tin deposits associated with their fringes, although actually most of the tin ore obtained in the country comes from the alluvial deposits of the valleys, the ore having been removed by denudation from its original position and washed down into these valleys. There are some small basins of young rocks in various places, of which the one at Rantau Panjang near Kuala Lumpur is the most important, for it contains considerable seams of coal, mined for use on the Malay Railways.

Climate and Vegetation.—Malaya lies entirely north of the equator, but the northern boundary of the British territory is only about $6^{\circ} 30' N$. As a result, the climate is equatorial and the rainfall well distributed throughout the year, although there is an increasing tendency, as one goes northward, for a single rainfall maximum to be marked and for a “dry season” to develop. Perhaps it is better to say that the northern part has two seasons—a wet and a wetter—whereas in the south, as, for example, in Singapore, no month has less than 6 inches or more than $10\frac{1}{2}$ inches. The temperature of lowland stations throughout the year averages about 80° with a yearly range of only 3 or 4 degrees, whilst the average rainfall of most of the country is not over 100 inches.

The climate of Malaya is an excellent example of an equatorial type, and consequently the economic development of the country sets a splendid standard of achievement for this type of climate. The principal feature is not the great heat—one never gets the same high temperatures as in the monsoon lands—but the extraordinary monotony, the same throughout the year. It has been truly said that Malaya is a healthy and delightful country for one in good health, but it kills by its monotony, and offers no chance of recuperation for those who are “run down.” The eastern side of the Peninsula is exposed to the full force of the north-east monsoon, blowing across the South China Sea, and the neighbouring seas are very stormy in this season. The western side, however, is sheltered from the south-west monsoon by the island of Sumatra, and the strait between Malaya and Sumatra is comparatively smooth. This factor has assisted considerably in the economic development of the western side of the Peninsula.

The natural vegetation of Malaya is dense, evergreen equatorial forest, extending from sea-level to the top of the highest ranges; whilst along the flat coastlands of the west coast are huge mangrove swamps, and on the sandy strands of the east coast are narrow bands of the graceful casuarina tree. It has already been mentioned that the equatorial forests of Malaya are not the gloomy, vault-like type such as those of the Amazon Basin. The trees are of many species, growing close together, tall, straight and unbranched, and generally supported by plank buttresses at their bases. These plank buttresses, it should be explained, perform the same function in steadying the lofty trunk as the buttresses which steady the high walls of a cathedral. About half the trees are Dipterocarps and average 100 feet in height. It is rarely that more than two or three examples of one particular species are to be found within a single acre of forest. This makes the extraction of any specified type of timber extraordinarily difficult. Below the canopy formed by the high trees, there is a lower storey of bamboos, canes, and climbers, and from Malaya are obtained large

quantities of the well-known rattan cane and Malacca cane. In its natural form the forest does not furnish much that is of direct use in commerce, though gutta-percha is obtained from a tree grown in the Peninsula, and another yields the substance jelutong, much in demand in the United States in the manufacture of chewing gum.

Agriculture.—Agriculture in Malaya may be divided into the native cultivation of the Malays and the plantations run under European and Chinese supervision. The Malays have concentrated on the west coast valleys where rice can be grown, but their production is mainly for their own use and does not suffice to feed the Chinese and Indian population of the Peninsula, with the result that three-eighths of the total rice consumed in the country has to be imported. The Malays are a cheerful

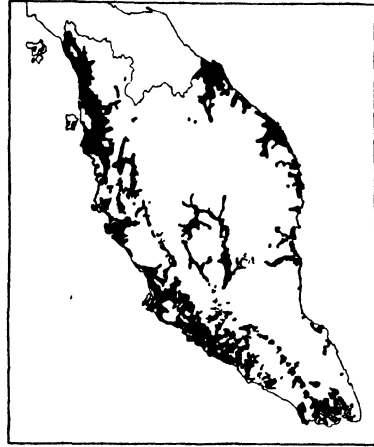


FIG. 71. Malaya: agricultural areas (shown in black) illustrating their importance on the west coast.

but indolent race, and the great development in the country has been in spite of, rather than because of, the indigenous population. Away from the west coast valleys there is little native cultivation; parts of the forests are still inhabited by the very primitive Semang, who afford an excellent example of a primitive race unable to make headway against the forces of nature, unarmed with the devices

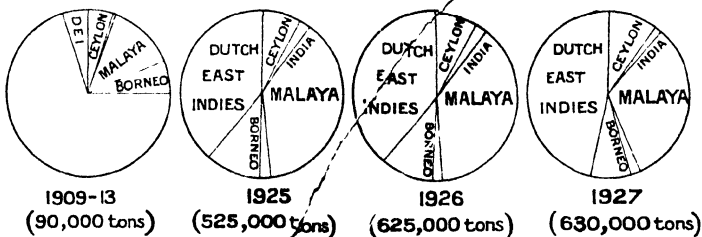


FIG. 72. World production of rubber, showing the relative importance of production in Dutch and British Asia.

employed by the civilized West. Plantation development dates really from the establishment of rubber estates on a commercial scale about 1895. At first progress with the new crop was slow, but since 1905 there has been an amazing expansion, the rubber boom lasting until 1919, when over-production became a serious

difficulty. In 1919 the production of rubber reached over 200,000 tons and the average for the next ten years has been rather over this figure, being kept at this comparatively low level by what is known as the Stevenson Restriction Scheme. Rubber occupies an area in Malaya probably approaching three million acres, mainly on the lower hills and low ground of the west of the Peninsula. The forest is cleared by felling the large timber trees and burning off all that remains, the greatest care being taken to prevent the soil being washed away by heavy downpours of rain. In fact, it is necessary to grow temporarily some cover crop to prevent this soil erosion. The rubber trees do not start to bear until about the seventh year, and the full yield is not obtained till some years later. Malaya supplies more than one-third of the world's rubber.

Amongst other plantation crops may be mentioned coconuts, which thrive especially on the sandy soils of the coastal districts, and the African oil palm, which, though only recently introduced, is rapidly becoming important. The cultivation of pineapples is centred at Singapore. Pineapples, it is interesting to notice, thrive on poor soil; rich soils produce larger fruit but with a poorer flavour. Many other crops are suited to Malayan climatic conditions, and extension in the near future is probable.

Mining.—Rubber is one great mainstay of Malayan prosperity, the other is tin-mining. Nearly all the tin mined at present in Malaya is alluvial tin, as lode mining for the mineral *in situ* is only in its early stages; yet even so Malaya produces nearly one-third of the tin of the world. The richest deposits are found in the valleys of the west, and the tin ore is obtained by excavating the gravel of the valleys, washing away the lighter material, and so leaving behind the very heavy tin ore. Much of the excavating is carried out by hand, especially by Chinese labour, but in such a wet land as Malaya it is also possible to employ dredges, whilst in other cases

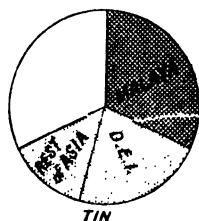


FIG. 73.—World production of tin.

the gravel is pumped out together with large quantities of water or washed out of place by turning a huge jet of water on to the deposit. The tin ore is sent to Singapore and Penang to the big smelteries before being exported as tin. Malayan tin is especially important in the tin-plating industry, and much of it goes for this purpose to South Wales. Coal, also, is obtained from one of the old lake basins, as already mentioned, and is used on the Malayan railways.

Population and Development.—A few years ago it could be said that the population of Malaya consisted roughly of one-third Malays, one-third Chinese, and rather less than one-third Indians,

with a sprinkling of Europeans and Eurasians. The Malays are the indigenous cultivators, living mainly in rural districts, the Chinese supply most of the labour for the mines and also form the shop-keeping and artisan classes in the towns, whilst the Indians supply the coolie labour for the rubber plantations. In the last few years the proportions have been changed by the enormous immigration of Chinese, in some years more than 300,000 Chinese arriving at the port of Singapore alone. Everywhere in Malaya the numbers of men are vastly in excess of the numbers of women; in fact, throughout the country as a whole there are roughly two men to every woman. This, of course, is due to the fact that the Indian and Chinese immigrants do not bring their women folk until they have become more or less permanently settled in the new land. Out of the total population of the Peninsula over three million, nearly half, are Chinese. These figures afford an interesting example of the peaceful Chinese invasion which has been taking place recently.

The largest towns are the two great ports situated in the Straits Settlements, both on islands, namely, Singapore

and Penang. The island of Singapore is about 27 miles long and 14 miles wide, the town being situated on the southern side. The British owe the possession of this valuable island to Sir Stamford Raffles, who purchased it in 1819 for about £4,000. At that time it was practically uninhabited, and owes its present importance mainly to its geographical position at the meeting of the world's great trade routes from east to west, at the same time being favoured with a magnificent anchorage. It is fortunately separated from the mainland only by a narrow strait, across which a causeway, utilized by the railway and a road, has been built. The population of Singapore is nearly half a million. Penang, the other great port, also on an island about half the size of Singapore, handles

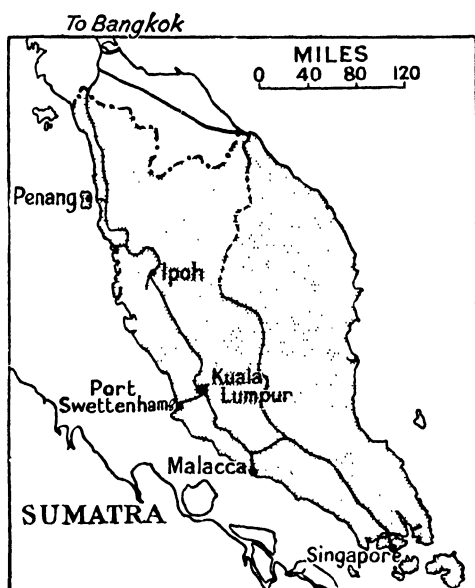


FIG. 74.—The principal railways of Malaya.

much of the import and export trade with Europe, being nearer Europe than Singapore. The old town of Malacca on the mainland, also one of the Straits Settlements, is now comparatively unim-

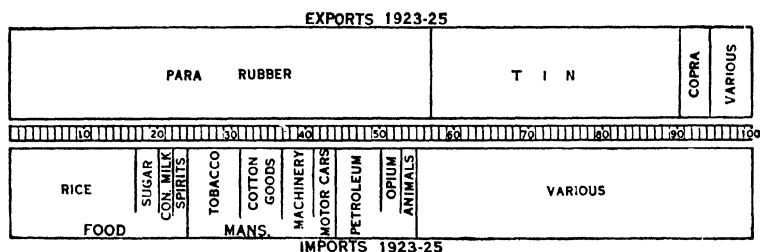


FIG. 75.—The foreign trade of Malaya.

portant, although it is the oldest European settlement in the East, having been founded by the Portuguese as long ago as 1511. The principal town of the Federated Malay States is Kuala Lumpur,

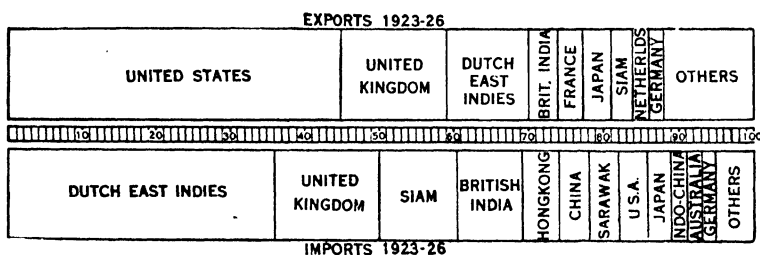


FIG. 76.—The direction of the foreign trade of Malaya.

near the centre of the tin-mining region and a short distance from its own port, Port Swettenham. Ipoh is another tin-mining centre.

Foreign Trade.—Fig. 75 shows the trade of British Malaya as a whole, and emphasizes the overwhelming importance of rubber

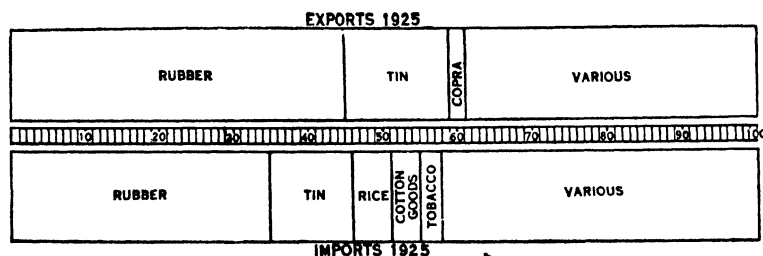


FIG. 77.—The trade of the Straits Settlements.

and tin amongst the exports. The large proportion of rice shown among the imports should also be noted. The bulk of the foreign trade passes through the ports of Singapore and Penang. If one

takes the trade of the Straits Settlement by themselves, as shown in Fig. 77, it is found that this trade is essentially of an entrepôt character, rubber being imported and refined, tin ore being imported and smelted, and both re-exported. The greatest consumer of rubber in the world is the United States, hence the large proportion of the export trade with that country. Singapore also smelts much of the tin produced in the Dutch East Indies, hence the importance of that country in the import trade.

Before leaving Malaya it should be noticed that the prosperity of the country depends to a very large extent on the wise expenditure of profits from tin and rubber in the construction of a magnificent system of roads and railways.

THE DUTCH EAST INDIES

Introductory.—The Dutch possessions in Asia include the greater part of the East Indies, excepting only the northern and north-western parts of Borneo, which are British, and the eastern half of Timor, which is Portuguese. They include also the western half of New Guinea, though this island is considered usually with Australia. The total area is nearly three-quarters of a million square miles, and the population roughly 51,500,000. The Dutch East Indies fall naturally into two parts :

(a) Java and Madura, with an area of only 51,000 square miles but with 37,000,000 people.

(b) The Outer Territories, area 683,000 square miles, population only 11,500,000.

In other words, Java affords a splendid example of a land with an equatorial type of climate, which has been highly developed, whilst the Outer Territories are only in the early stages of modern economic development.

JAVA AND MADURA

Physical Features.—The important Tertiary fold which forms the main backbone of Java lies nearer the south coast than the north, and accounts for the more rugged nature of the south. Most of the rivers flow northwards, and it is in the north that one finds alluvial plains and the chief towns and ports. The striking feature of the topography of Java is not, however, the fold range, but the succession of lofty volcanic cones, twenty or more of which exceed 8,000 feet in height. Although no less than 64 per cent. of the surface of Java is upland or mountain, and volcanic rocks occupy over a third of the surface, the equatorial climate has produced rich deep soils from the volcanic rocks, and many of the hillsides have been laboriously terraced, with the result that four-fifths

of the surface are cultivated. Further, Java supports an agricultural population of over 700 to the square mile, and still has a huge surplus of sugar for export.



FIG. 78.—Physical map of Java and Madura.

Natural Regions.—Java can be divided into five parallel strips :

- (a) The narrow, unimportant, south coastal strip.
- (b) The main mountain ridge, still thickly covered with dense, evergreen forest, but with rubber plantations in the east.
- (c) The volcanic belt of cones and high plains filled with fertile volcanic ash, large areas devoted to rice. Tea is a great crop on hillsides in the west, coffee in the east.
- (d) An undulating hilly tract runs parallel to the north coast ; it has a less fertile soil, but here are found the oil-fields of Java (in the east near Rembang) and most of the teak forests. This belt and the next are continued into the satellite island of Madura.
- (e) The entire northern coast, with few exceptions, is an alluvial plain, affording vast stretches of rice and sugar lands.

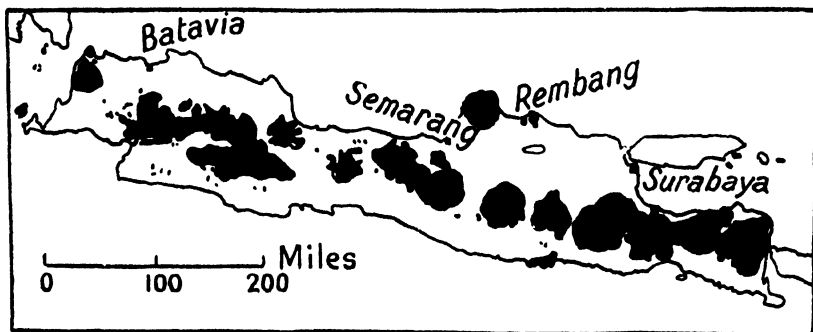


FIG. 79.—Java and Madura : volcanic regions. Areas of volcanic rock shown in black.

Climate and Agriculture.—Lying on the southern fringe of the equatorial belt, Java has a high average temperature throughout the year, and is under the influence of each monsoon for half the

year. The heaviest rainfall is on the volcanic heights (often over 200 inches per year), but most of the northern plain has only 40 to 80 inches. The period of the north-west monsoon (see Fig. 61) is the rainiest season along the north, the period of the south-east monsoon the rainiest along the south.

Permanent irrigation and flood control works are very important and necessary, both to ensure an adequate supply throughout the year, whereby a continuous succession of rice harvests is possible, and to obviate the destruction of crops and soil by sudden flooding.

Agriculture in Java may be divided into native agriculture and plantation agriculture. The main product of the former, and the staple food of the people, is rice. Rice-fields cover more than a quarter of the whole surface of the island, yet insufficient is produced for home needs. There is, however, an export trade because

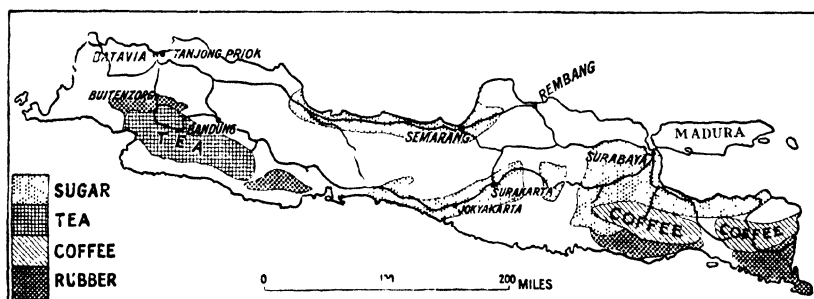


FIG. 80.—Java: cultivation and communications.

of the excellent quality. Another native crop is cassava, from which tapioca is made. First among plantation crops is sugar-cane, and Java ranks next to Cuba as a sugar producer (producing 10 per cent. of the world's total). The Government is not, however, allowing any expansion of the acreage under sugar at the expense of rice. Tea takes second place, coffee—an older industry—third. The acreage under rubber has increased greatly of recent years, especially in Central Java. Another plantation crop is cocoa, but special interest is attached to the cultivation of cinchona—almost a Government monopoly—from the bark of which quinine is prepared. Java now supplies nearly the whole world output, so that the old name “Peruvian bark” seems absurd. Java also provides the bulk of the world's cocaine, prepared from the leaves of the coca tree.

Population.—The majority of the inhabitants of Java are the indigenous Javanese—a fine example of a virile equatorial race—so that there is little room for the Chinese immigrant (contrast Malaya). Large numbers of Dutch have settled in Java: they not only live continuously there but retire and spend the last years

of their lives in the hill stations—thus proving that a white race can become acclimatized in an equatorial island.

Communications and Towns.—Like Malaya, Java has an excellent system of roads and railways, converging on the three chief ports of Batavia (with a fine modern harbour five miles to the east at Tanjong Priok), Semarang, and Surabaya. Buitenzorg and Bandung are important inland centres, whilst Jokyakarta and Surakarta are native towns in Central Java with over 100,000 inhabitants each. Batavia is not only the chief port for the produce of the island, but also has a considerable entrepôt trade—nothing like that of Singapore, however, which is only thirty-six hours away.

THE OUTER TERRITORIES

The mainstay of the prosperity of Java is agriculture, but Java has almost reached saturation point as far as agricultural population

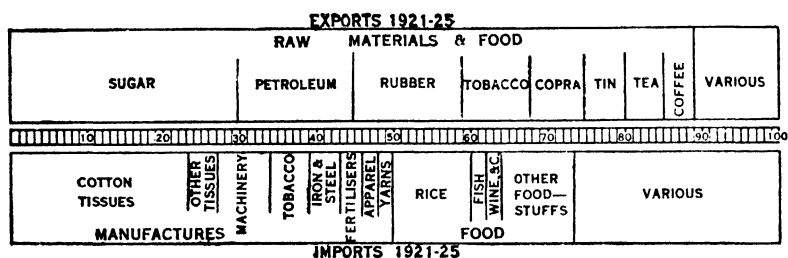


FIG. 81.—The foreign trade of the Dutch East Indies.

is concerned : there is little land left for development. The energy and resources previously concentrated on the island of Java are now available for development of the Outer Territories. In 1922 for

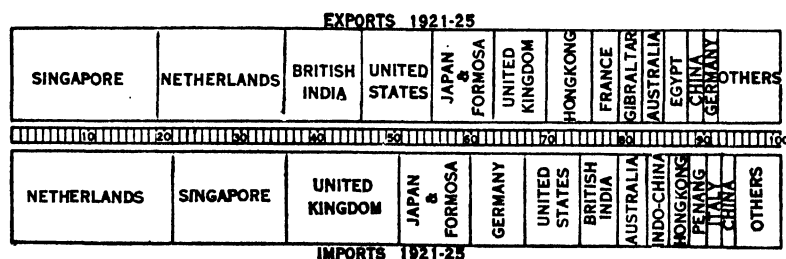


FIG. 82.—The direction of the foreign trade of the Dutch East Indies.

the first time exports from the Outer Territories exceeded in value those from Java.

Sumatra.—The large island of Sumatra consists of a mountainous volcanic backbone on the west and a broad stretch of undulating or low land on the east. The population of six million

is rapidly expanding and there are numerous Javanese and Chinese immigrants. Rubber, palm-oil, tea, and tobacco are leading crops and Sumatra has some oil-fields.

Singkep, Banka, and Belitong.—These little islands form a continuation of the mountains of Malaya, and it is from these islands that the tin ore of the Dutch East Indies is obtained.

Bali and Lombok are small islands east of Java, which in general they resemble.

Dutch Borneo is for the most part thinly populated and economically undeveloped. Oil-fields have recently become important.

Celebes, though very mountainous, has soils and a climate resembling that of Java, and the export of copra and macassar oil (from Macassar), coffee and spices (from Menado) is capable of wide expansion.

The Molucca Islands are the famous Spice Islands which were the objective of so many of the medieval explorers.

BRITISH BORNEO

General.—The territory under British influence in Borneo occupies about a quarter of the island and is organized in three units :

- (1) British North Borneo (31,000 square miles).
- (2) Brunei (4,000 square miles).
- (3) Sarawak (42,000 square miles).

In addition there is the island of Labuan, lying off the coast of Brunei, forming part of the Straits Settlements.

British North Borneo is under the jurisdiction of the British North Borneo Chartered Company—just as India was in the old days under the East India Company. The country can be divided into three strips :

(a) the coastal plains—grass-covered alluvial stretches suitable for rice and other crops, fringed on the seaward side by mangrove swamps.

(b) The foothills or downs—a zone of low hills sometimes fertile and cultivated, at other times swept bare of soil by heavy rains.

(c) The hills—consisting of range after range, densely forested, trending north and south and rising higher and higher till they reach over 6,000 feet.

The climate of British North Borneo is typically equatorial, the temperature of the coastal belts averaging about 80°. It is possible, however, to distinguish two seasons, the season of the north-east monsoon from October to April, which is the principal rainy season, and the season of the south-west monsoon, which is drier.

The population is about a quarter of a million, and consists mainly of Chinese and Mahommedan settlers on the coast and aboriginal tribes inland. The chief towns are Sandakan on the east coast and Jesselton on the west coast. The country as a whole, as these figures will suggest, is very undeveloped, but in recent years there has been a rapid rise in the production and export of plantation rubber and tobacco, and still more recently the oil-fields of the foothill belt have assumed a very considerable importance. The foreign trade is carried on mainly through Singapore and Hong Kong. The average value of the exports of late years has been about £1,300,000, two-thirds of which comes from rubber.

Brunei is a tiny state under the rule of a native sultan with a British resident as adviser. It is divisible into the same three physical headings as British North Borneo, and the products are similar, it being another territory capable of great agricultural development.

Sarawak is a state ruled with pure autocracy by an English rajah since 1842. There is the same three-fold division as in British North Borneo, and important oil-fields are situated on anticlines in the foothill belt, the town of Miri being the headquarters of the oil-fields. The other two principal towns are Kuching and Sibü, both on navigable rivers. The agricultural products include sago, pepper, and plantation rubber; in recent years rubber and mineral oil have represented three-quarters of the total value of the exports, *i.e.*, three-quarters of $3\frac{1}{2}$ millions. Again the trade is mainly carried on through Singapore.

THE PHILIPPINE ISLANDS

Position and Size.—The Philippine Islands have an area of 114,000 square miles, or rather less than that of the British Isles, but the total is made up by over 7,000 distinct islands. Since the Philippine Islands came under the United States Government in 1899 considerable development has taken place, and the Filipino people, who are racially allied to the Malays and number roughly 10,000,000, are now largely self-governing. The Philippine Islands stretch from about Lat. 20° N. to 5° N., and they lie almost entirely outside the equatorial belt.

Physical Features.—The islands consist of Tertiary fold ranges arranged in festoons and lying at the edge of the Asiatic continental shelf. Only 50 miles to the east is one of the deepest known parts of the Pacific Ocean, demonstrating the position of the Philippines at the extreme edge of a very well-marked platform. The mountain chains themselves are all partly submerged, so that the land areas of the islands are merely the higher portions of the

chains and in many cases are actually volcanic cones. Various metallic minerals of economic importance are known to occur, but the output, except of gold, is not large, principally due to the

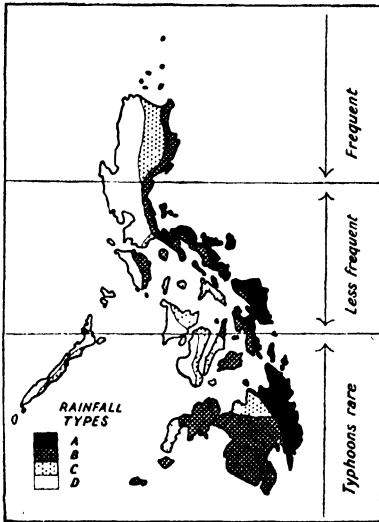


FIG. 83.—Philippine Islands: climate.
A=Rain throughout the year from the North-East Trades.
B and C=Transitional types.
D=Wet season from the Indian monsoon.

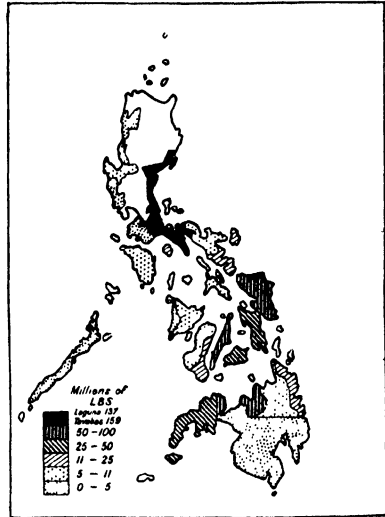


FIG. 84.—The production of copra in the Philippine Islands in 1920-4. (After Borga.)

heavy expenditure necessary for development. Other minerals include coal, iron, and guano.

Climate and Vegetation.—Lying as they do outside the equatorial belt, the islands are affected and their climate determined by the Asiatic monsoons. The greater part of the east coast has

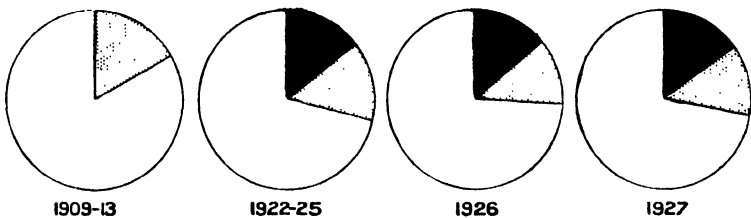


FIG. 85.—The position occupied by the Philippine Islands in the world's production of copra and coconut oil. (After Stamp's *Asia*.)

(The complete circle represents the world's production [coconut oil converted to copra]; in black, the coconut oil production of the Philippines; dotted, the copra production.)

rain throughout the year, but with a winter maximum from the north-east trade winds. The greater part of the west coast has sharply-marked wet and dry seasons, the wet season being during

the period of the Indian monsoon from June to November. The central belt of the islands has a transitional type of climate with or without a short, dry season. The northern part of the Philippines lies in the main typhoon belt of the Pacific Ocean, and the frequency of typhoons is an important factor in the economic development of the islands. Thus in the north the climate is eminently suitable

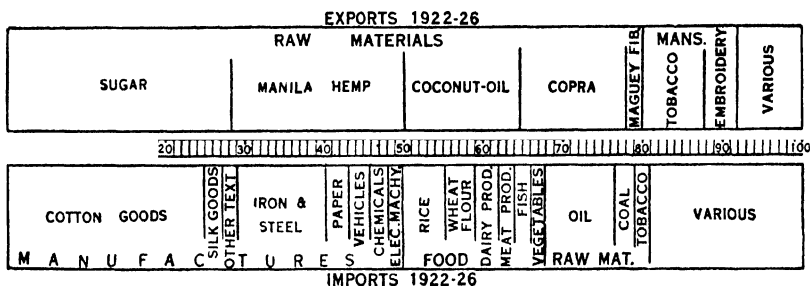


Fig. 86.—Foreign trade of the Philippines.

for coconut plantations except for the occurrence of these destructive typhoons. The natural vegetation of the islands is forest, usually evergreen, which still covers about two-thirds of the surface. In other areas, as one finds so commonly in the Tropics, the forest has been destroyed by the shifting cultivation of the aborigines, and the deforested tracts are covered with useless grass or scrub. The better forests are exploited to some extent for cabinet timbers, canes, dye woods, and other products.

Agriculture.—The principal food crops are rice and maize, but the Philippines do not produce nearly enough for home con-

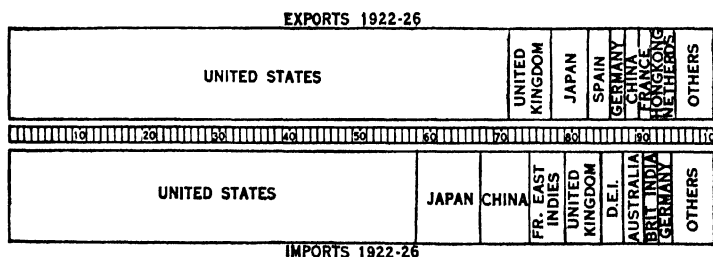


Fig. 87.—The direction of the foreign trade of the Philippines.

sumption, a state of affairs which reflects the poor condition of rice cultivation in the country, since the islands should easily be self-supporting. The great cash or export crops are abaca or Manila hemp, coconuts, sugar-cane, and tobacco, with rubber of increasing importance in the south. Manila hemp is a hard-fibred hemp much used in rope making and is obtained from the stems

and leaves of a plant closely resembling the banana. Practically the whole of the world supply comes from the Philippine Islands and constitutes nearly a quarter in value of the exports of the islands. Coconut products now form the leading export, and the islands may be classed as the leading country in the world in this trade; the output of copra and coconut oil representing in recent years more than a quarter of the world's total. Coconut plantations are most important where the rainfall is well distributed and typhoons are absent, that is, in the central and southern parts of the east coast. The improvement in the local oil mills has resulted in a very large increase in the export of coconut oil as compared with copra. Sugar cane cultivation has recently been carried

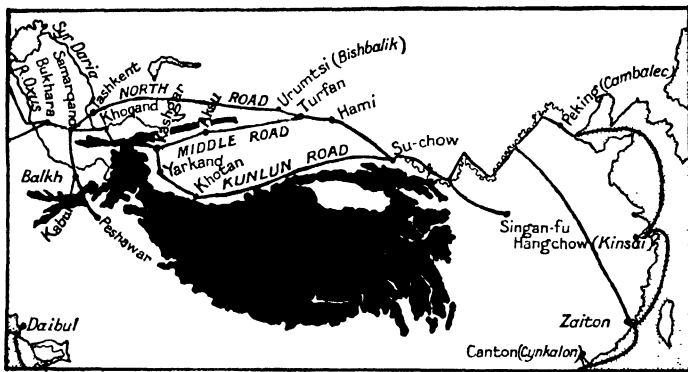


FIG. 87A.—The chief trans-Asiatic mediæval trade routes between Europe and the Far East, still of importance as caravan routes. Mediæval names in italics. Land over 12,000 feet in black. (From Stamp's *Asia*.)

on under improved conditions, and the export is now over half a million tons.

Communications and Trade.—There are railways in the principal islands and a well-developed road system, but naturally the only means of communication between the islands is by sea. The bulk of the foreign trade is with the United States, and it has been urged that there are no tropical or equatorial products required by the United States which could not be produced in the Philippine Islands. It will be remembered that the principal imports into the United States are products of tropical or equatorial regions which cannot be grown at home; hence the importance of the Philippine Islands in contributing to the economic independence of the States. Most of the foreign trade passes through the principal town of Manila.

THE CHINESE REPUBLIC

In 1912 one of the world's oldest empires—the Empire of China—became a republic. The old Chinese Empire included the rich, thickly populated region of China Proper and Manchuria, together with the huge but less important “outer territories” of Sinkiang or Chinese Turkistan, Tibet, and Mongolia, the last two largely desert. Nominally the present republic covers the same area, but the central government in Peking has never yet been strong enough to control the whole, and many states of China are acting on their own, and

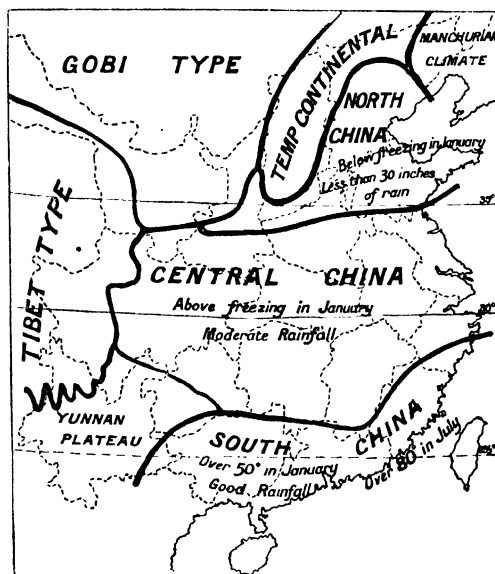


FIG. 87B.—The climatic regions of China (see page 111).
(From Stamp's *Asia*.)

part of the country is in a state of civil war. The area of “Greater China” is about $4\frac{1}{2}$ million square miles, of which China Proper with Manchuria is 1,900,000 (Manchuria 364,000) square miles.

CHINA PROPER

Position and Size.—China is about the same size as India, and has at least the same number of people, probably more. Actually,

however, one is justified in saying that China is much more densely populated than India for the proportion of habitable land is much less. China, in contrast to India, lies almost entirely outside the Tropics. The Great Wall of China, built thousands of years ago by the Chinese as a ~~protection~~ against raiders from Mongolia, still marks roughly the northern limit of China Proper. Until 1907 China Proper consisted of eighteen provinces, but in that year the three Manchurian Provinces, formerly a separate dependency, were united as the Viceroyalty of the three Eastern Provinces under China Proper.

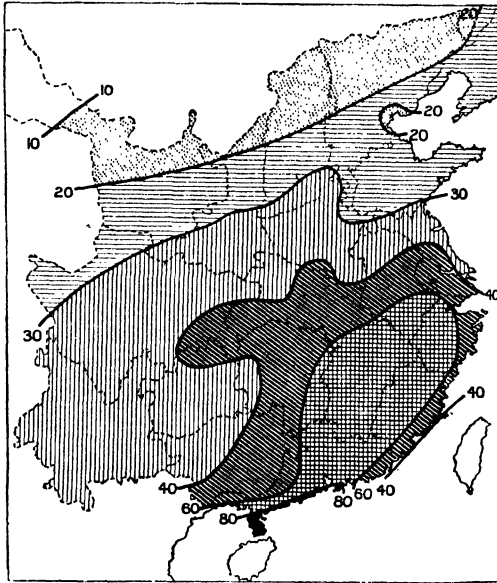


FIG. 87c.—The mean annual rainfall of China in inches (see page 111).

Physical Features.—Broadly speaking, China Proper lies to the east of the great series of plateaus which constitutes the heart of the continent. Excluding Manchuria, the country may be considered as consisting of three great river basins—the basins of the Hwang Ho, the Yangtze Kiang, and the Si Kiang. These fundamental geographical divisions are useful because they correspond with the popular division of the country into North China, Central China, and South China. The Hwang Ho and the Yangtze Kiang both rise amidst the mountains of the high plateau of Tibet, and their upper courses lie outside China Proper. Nearly the whole of the Si Kiang basin, on the other hand, lies within the confines of

China itself. In the north-west China includes a considerable portion of what is geographically a part of the Mongolian plateau. Separating the Hwang Ho and the Yangtze basins, and the Yangtze and Si Kiang basins are important offshoots of the central mountainous mass of Asia.

Geology and Minerals.—Broadly speaking, the south of China is constituted by a massif of old rocks, but coal-bearing rocks occur in basins amongst older rocks ; the south of China includes larger

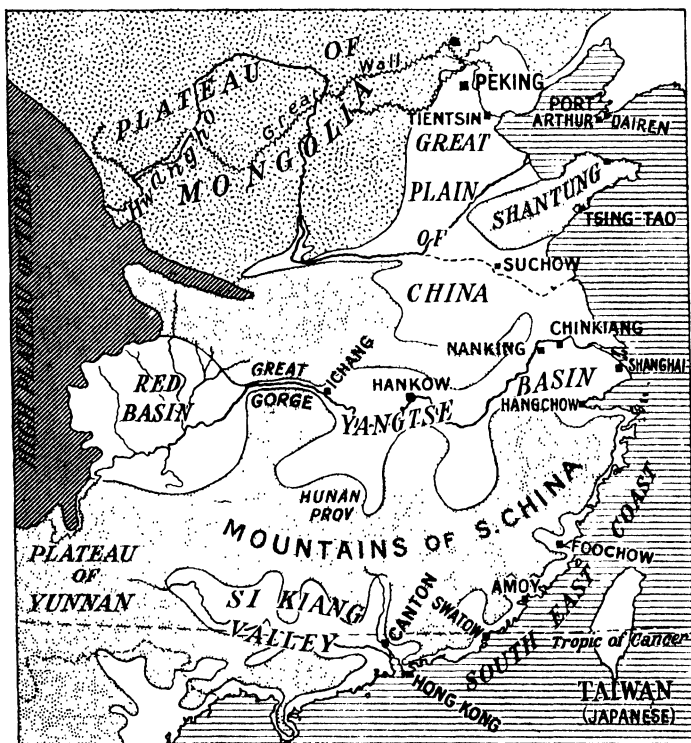


FIG. 88.—The natural regions of China.

stretches of sedimentary rocks. Though as yet little developed there is no doubt that China is very rich in minerals. China may be regarded as one of the first coal countries of the world, and coal occurs in most of the eighteen provinces as well as in Manchuria. The total output is estimated, however, at only 16,000,000 tons, of which about half is from modern mines. The huge field underlying Shansi and part of Shensi probably rivals the Pennsylvanian field in size and potential importance. Part of the Shansi field is anthracitic. Iron ore is abundant in the latter field and is also important in Chihli,

Shantung, and other provinces. Amongst the leading deposits now being worked are those of Tayeh, near Hankow. China's present output of iron ore is only about 1,500,000 tons a year. It is interesting to notice that modern coal and iron ore mining is practically restricted to the area served by railways. A little petroleum is obtained in Shensi, but conditions generally are not suitable in China. Yunnan Province is probably one of the richest copper districts in the world; tin is mined in south-western China. China has almost a world monopoly in the production of antimony—two-thirds of the world's total, mostly from Hunan. Gold, silver, lead, molybdenum and bismuth are amongst other minerals produced in China.

Climate.—In winter atmospheric conditions in China are dominated by the mass of cold heavy air over the heart of the continent. In contrast to India, China is not shut off from the interior by any great chain of mountains. Consequently in winter strong, cold winds bear outwards from the interior. Over Northern China they are particularly strong, giving rise to the well-known and much hated dust storms. The whole of Northern China is below freezing in winter, the January isotherm of 32° F. reaching its southernmost limit in the Northern Hemisphere. Frost and snow are usual, except in Southern China. Except along the Yangtze Basin, where winter cyclones give rise to a little rain, and along the S.E. coast, the cold season in most of China is one of clear skies and rainlessness.

In summer, depressions form in the interior and the summer monsoon blows in from the south and south-east—warm and moist. The summer winds are rarely as strong as the winter winds—a direct contrast with India—but May to September is the rainy season, as in all parts of monsoon Asia. In July there is little difference in temperature between North China and South China. Peking averages 79° , Hong Kong 82° .

China thus falls into four climatic provinces, which correspond with the physiographical divisions:

South China has a tropical monsoon climate, but with colder winters than are experienced in India.

Central China has cold winters and warm, wet summers, but with local winter rains.

North China has winters below freezing, with strong dust-laden winds and hot, wet summers, but with a rainfall generally below 40 inches.

Manchuria has still colder winters and cooler summers.

Natural Vegetation.—In few countries of the world has the natural vegetation been removed as completely as it has over much of China. The barren, eroded hills so characteristic of much of China suggest a rocky desert country rather than one which should, properly, be clothed with good forest growth. Only in a few parts,

such as the hills of the south-east, is there still a good forest growth.

Agriculture.—Like India, China is essentially an agricultural country and is, broadly speaking, self-supporting in the matter of foodstuffs. But China includes a far larger proportion of moun-

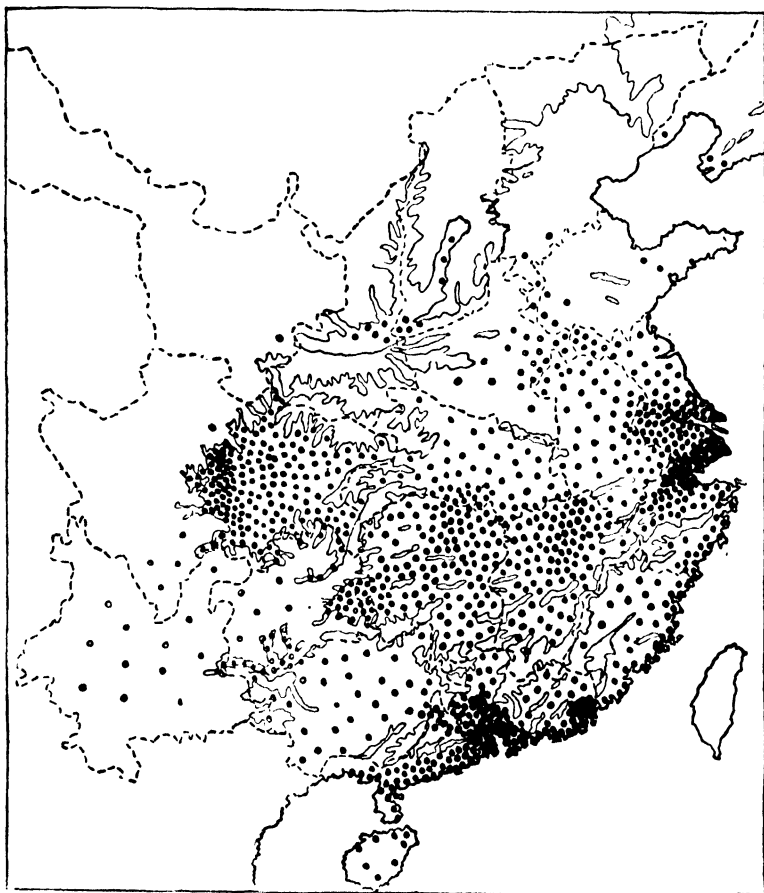


FIG. 89. —The distribution of rice in China.

Each dot represents approximately 50,000 acres with a total of 50,000,000 acres. Nearly all the rice is where the land is under 3,000 feet (the light line is the 3,000 feet contour line), and in the centre and south of China (Yangtze and Si Kiang basins). (In part after *La Fleur, Foscoe, and Baker.*)

tainous country not suitable for agriculture than does India, with the result that the valleys and other fertile regions are very densely populated. It is estimated that in some areas 3,000 people and 1,000 animals find their sustenance in a single square mile of land. Taking China as a whole there is rather less than 0.4 acre of cultivated land

per person. The two great achievements of the Chinese farmers have been the maintenance of soil fertility and the development of a highly specialized system of crop rotation. The former has been accomplished largely by the utilization to the utmost of human manure and by such laborious processes—possible only where labour

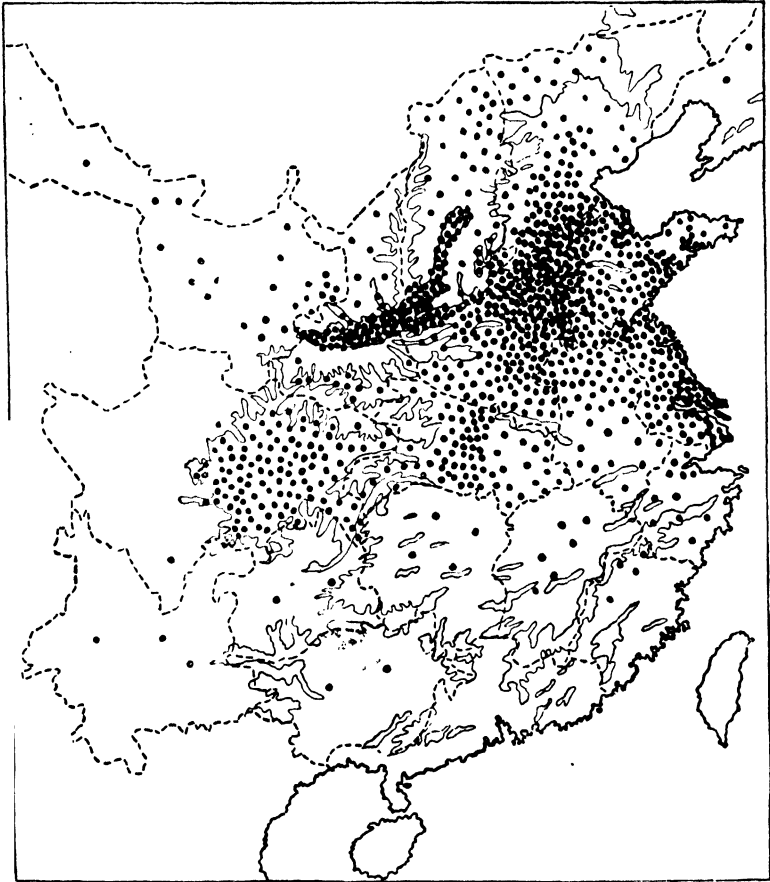


FIG. 90.—The distribution of wheat in China.

Each dot represents 50,000 acres out of an estimated total of 52,200,000 acres. Notice that most of the wheat is in the low ground—below the 3,000 foot contour which is marked—and in North China. (In part after *La Fleur, Foscoe, and Baker.*)

is super-abundant—as the actual mixing by hand of different soils. Every farm is really a large garden and not only is multiple cropping adopted but every spare inch of land is utilized.

Three-quarters of all the cultivated land in China is occupied by the three chief food grains—rice, wheat, and millet.

Rice is the dominant, almost the sole food crop in Southern and

South-Eastern China. The yield averages 1,750 lb. per acre. In Central China rice and wheat share the premier position as food grains; in Northern China there is little rice.

Wheat.—Very little wheat is grown in Southern China; in Central China it is an important crop; in Northern China and Manchuria it tends to become the leading crop.

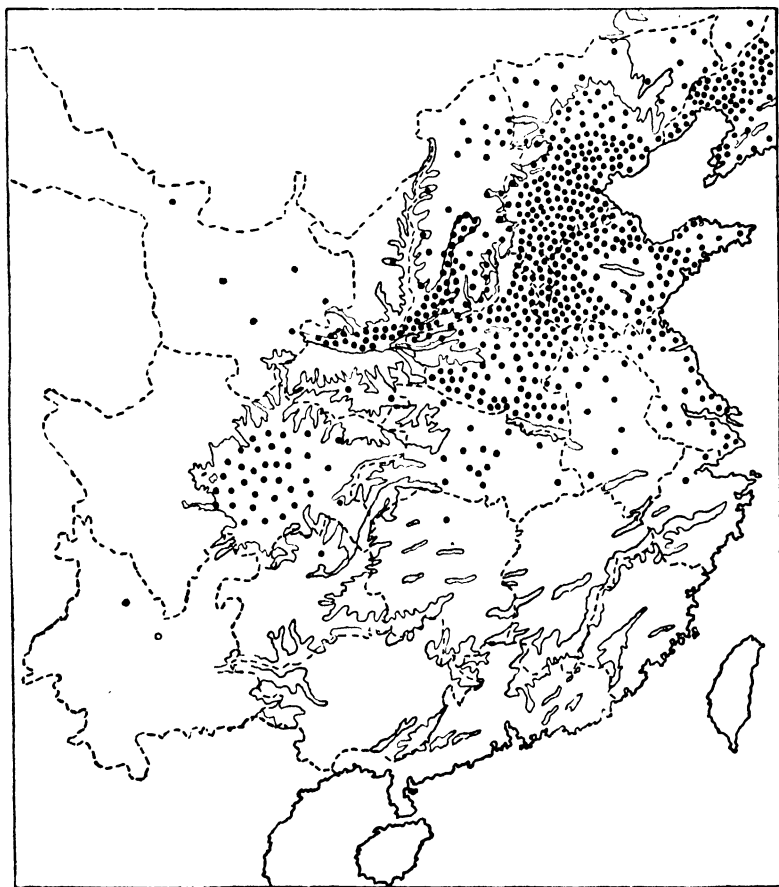


FIG. 91.—The distribution of millet in China.

Each dot represents 50,000 acres out of a total of 35,000,000. Millet, like wheat, is almost restricted to North China. (In part after *La Fleur, Foscue, and Baker.*)

*Millet*s tend to become the dominant grain where the rainfall is less than 40 inches per year, being concentrated in Northern China and Manchuria. The better lands in these drier tracts are occupied by wheat, and soya beans now occupy much of the land formerly given to millets.

Other food crops in the south include sugar ; in the north maize, peas, and beans. Tea is cultivated in the south and west.

Cotton is grown widely in Central and Northern China, the chief area of production being the Yangtze valley.

Other fibre crops include hemp, jute, and ramie. Mulberries and oaks are reared for agricultural purposes.

Animals.—The nine million horses and mules in China and Manchuria are mainly in the drier north where they can be used as pack animals. Cattle in China are primarily draft animals, since the Chinese use little beef and make but slight use of milk or dairy produce. Fat pork, on the other hand, is a favourite foodstuff, and there are estimated to be 60,000,000 pigs in China. Sheep, primarily reared for their coarse, inferior wool, are most numerous in the north and west. Poultry are abundant and egg products form a leading item of export. Sericulture is especially important in Central China and Shantung, and China probably produces more silk than the whole of the rest of the world, but does not export as much as Japan.

Manufactures.—Native looms are found in most Chinese villages, but an important feature in the development of modern China is the erection of cotton, wool, and silk mills in Canton, Shanghai, and other great centres. A large proportion of the cotton-mills are Japanese owned. Flour-mills are becoming important. Amongst other industries mention must be made of the great Chinese iron-works at Hanyang, near Hankow, using the Tayeh iron ores.

Population.—A census, as understood by western nations, has never been taken in China, and it is difficult to know the exact population. In China proper and Manchuria, it almost certainly exceeds 400,000,000. Two factors control the distribution of the population. One is physical—most of the population is concentrated below the 2,000-foot contour line. The other is religious. Although the Chinese are nominally Buddhists or Confucianists, the real pivot of their religion is ancestor worship. This ties a family to the burial places hallowed by the remains of its predecessors and thus greatly deters emigration and movement. The typical undivided Chinese family is symbolical of the same national trait. In many areas overcrowding results in utmost poverty and frequent famines, but only the Cantonese or the Chinese of the south-east coast are able to tear themselves away from home ties and seek fortunes abroad. Thus the vast open spaces of Manchuria or Mongolia are being but slowly developed.

Communications.—The Yangtze and its tributaries form the great highway of communication in Central China; the Grand Canal and the network of small canals in the Yangtze delta and northwards to the Great Plain. In South China the Si Kiang is

important. The railway system is still quite inadequate, and there are few roads in the modern sense. Over most of the interior primitive forms of transport by human porters and by wheelbarrow are the only means available.

Foreign Trade.—All the foreign trade takes place through the Treaty Ports and, like that of India, is nearly all sea-borne. Shanghai, Canton, Tientsin, and the south-eastern ports have the



FIG. 92.—The railways, navigable waterways, and canals of China.

lion's share of the trade. Amongst the exports, beans, bean oil, and other bean products now take the leading place, the oil going largely to continental Europe, the beans and bean oil to Japan. Raw silk is a close rival; a long way behind come raw cotton, tea, eggs, egg products, and coal. The relative importance of tea has dropped enormously since the early days of European trade with China. Most important among imports are cotton goods, machinery,

and rice. The disturbed state of China in recent years makes it especially difficult to generalize regarding the direction of Chinese

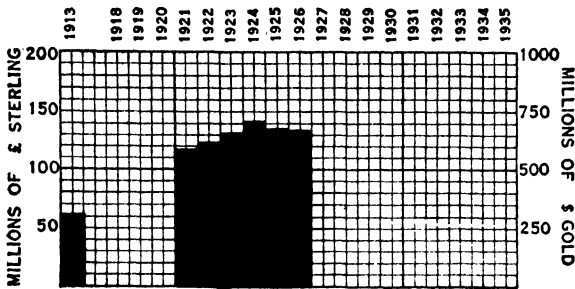


FIG. 93.—The exports of China.

The years 1925 and 1926 show how the Civil War has prevented the natural expansion.

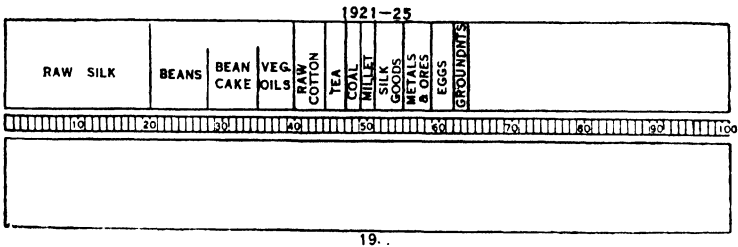


FIG. 94.—The exports of China.

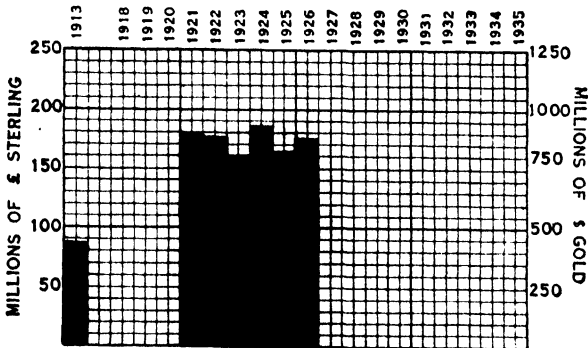


FIG. 95.—The imports of China (net imports).

This graph may be kept up to date from the *Statesman's Year Book* where the figures are given in £ sterling.

foreign trade. In 1925 40 per cent. of the trade was with Japan ; 26 per cent. with Great Britain and Hong Kong ; 9 per cent. with the United States. In 1927 Japan's share dropped to 26 per cent.

THE NATURAL REGIONS OF CHINA

The Loess Plateau of the North-West (Shansi, Northern Shensi, and Kansu).—In the north-west of China the original topography of the country has been obliterated by a great mantle of wind-blown dust or loess, through which only the higher ranges of hills appear. Each loess-filled basin forms a "hsien" or county, with the county town in the centre. Rivers and roads alike have cut deeply into the soft loess, and the loess plateau has become a land of sunken roads which, viewed from the surface, appears uninhabited except for an occasional cultivator; for the dwellings are dug out of the loess walls of the roads—warm and dry in winter, cool in summer. The natural fertility of the loess is great, but the rainfall is irregular and this part of China is less densely populated than most.

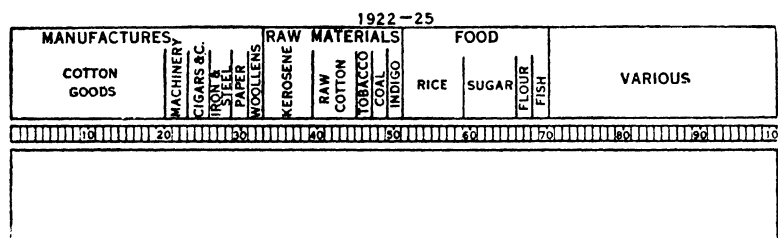


FIG. 96.—The imports of China.

The Wei Ho Valley.—This small but important region lies between the loess-covered plateau to the north and the Tsin-ling mountains to the south, occupying the central part of Shensi round the provincial capital of Si-an. A fertile, loess-covered valley, the special claim of this densely populated area is that it claims to be the cradle of Chinese civilization.

The Great Plain of North China.—Lying between the edge of the loess plateau on the west and the Gulf of Pe-Chih-li or the Shantung highlands on the east, the Great Plain of North China occupies a large part of the province of Chihli, the western portion of Shantung, and the north-east of Honan. Originally occupied by a shallow sea, the plain is built up of a series of marine gravels with a superficial coating of alluvium. The latter consists really of re-deposited loess laid down by numerous streams, including the Hwang Ho itself, which flow down from the plateau. In their passage across the plain there is but a slight fall and the great burden of fine sediment is deposited in the bed of the river. In order to confine the rivers, mud and straw embankments, sometimes faced with masonry, are built on either side and gradually the rivers come to flow between high banks and the water-level is well above that of the surrounding plain. Breaches resulting in disastrous floods

and constant changes in the courses of the rivers are inevitable. The rivers are a curse rather than a blessing, and the name of China's Sorrow, often applied to the Hwang Ho, is indicative of the state of affairs. But the fertile soil and the hard cereals (millet and wheat) afford a more nutritious diet than the rice of the south. Further, the vigorous winters have helped to make the Northern Chinese a fine sturdy people. In the days of old the Chihli plains were continually the prey of Mongol raiders from the plateau, but now it is the plain dwellers who are the aggressors and are pushing settled agriculture further and further on to the plateau. *Kalgan* is the centre of this new agricultural land. The position of *Peking* demonstrates the fear with which the raiders used to be regarded and which necessitated the building of a capital in such a position as to serve as a base against them. *Tientsin*, on the navigable *Pei Ho*, is the principal port of the Great Plain.

The Shantung Peninsula.—The Province of Shantung, excluding the western strip which forms part of the Great Plain of North China, consists of a mass of ancient mountains rising like an island from the plain on the west and the sea on the east. The commanding position of the Peninsula and the excellence of the few natural harbours in its rocky coast attracted the attention not only of Russia and Japan but also of the European powers who had interests to protect in the Pacific. Germany transformed the fishing village of *Tsing-tao* into a great port; the British leased *Wei-hai-wei* as a protective measure against the Russian occupation of *Port Arthur*. The hills of Shantung are barren and almost completely deforested; the valleys are densely populated and intensive agriculture is practised to the full. Sericulture is important. The sturdy Shangtungese emigrate temporarily to Manchuria and to Shanghai, and are more mobile than the Chinese of the interior.

The Szechuanese Alps.—The mountainous regions of the far interior are very sparsely populated by comparatively primitive people.

The Red Basin.—Occupying the heart of the province of *Szechwān*, the Red Basin is one of the most remarkable natural regions in the world. Hemmed in on all sides by a girdle of mountains, the basin was occupied in Tertiary times by a great lake in which were laid down the red sandstones from which the basin derives its popular name. When the lake was drained the outflowing stream cut the famous gorge between *Kwei-chow* and *I-chang*. The numerous streams in the basin have cut deep gorges through the sandstones into the old rocks below. The four leading north and south valleys comprise the richest agricultural land of the "Province of the Four Streams" (*Szechwan*). The whole of the Red Basin, with the exception of the *Chengtū* plain, is thus divided up into steep-sided ravines and ridges. But it is well watered, and

the hillsides have been terraced from base to summit. The farmers of this densely populated region produce a varied succession of crops—rice, wheat, maize, beans, sugar, hemp, and tobacco, whilst oranges are widely grown, and silk is one of the leading products of the region. Despite its interior situation, the climate of the Red Basin is warm and damp and the winters are milder than in most parts of China. Coal is abundant and crops out on the hillsides.

Though lying within the limits of the Red Basin, the Chengtu plain is distinctive in character from the remainder, and consists of a broad irrigated plain watered by the Min River. The density of population made possible by irrigation is almost incredible—more than 4,000 to the square mile in places.

The most remarkable feature of the whole Red Basin is its inaccessibility. Almost the only exit or entrance is by the Great Gorge and the region as a whole is self-contained and self-supporting.

The Central Basins.—It is probable that the waters of the Yangtze, emerging from the gorges which cut off the Red Basin from the rest of China, originally found their way to the Pacific Ocean through a series of lakes. The flat alluvial stretches of the Central Basins represent the floors of these infilled lakes. In each of them, indeed, there still exists a fragment of the ancient lake and in times of severe flood the whole countryside reverts again to what must have been its prehistoric character.

The Upper Basin is the largest and lies to the north and south of the Yangtze, partly in Hupeh and partly in Hunan.

The Middle Basin is similarly divided into northern and southern portions by the Yangtze.

The Lower Basin is less distinct and lies mainly north of the river.

The basins are surrounded by a tangle of mountains stripped bare of their original forest cover. Broadly speaking, wheat, barley, or cotton are dominant crops to the north of the Yangtze; rice to the south; tea and oilseeds grow on the slopes of the surrounding hills. The great highway of the natural region is the Yangtze and the whole centres on the great triple city of Hankow-Wuchang-Hanyang.

The Yangtze Delta.—The delta corresponds roughly with the province of Kiangsu. The whole is a vast alluvial plain and has been described as the “Holland of China” being traversed by canals in all directions. The principal food grain is rice, but mulberry trees line the canals, and this is the leading silk region of China. Much cotton is also grown and supplies the Shanghai mills as well as a surplus export to Japan. *Nanking*, the present capital, and the great port of *Shanghai* (just off the mouth of the Yangtze) are the two chief centres of the region.

The South-East Coast.—This region corresponds roughly with the provinces of Chekiang, Fukien, and eastern Kwangtung.

Backed by high mountains, the region is geographically isolated; the outlook of the people is towards the sea; in customs, as well as in many other ways they stand apart from the rest of the country. Rice is the crop in the valleys; tea gardens, orange, lemon, and mulberry groves cover the lower terraced slopes of the hills, the higher parts of which are still forested. Ningpo, Foochow, Amoy, and Swatow are the chief towns and ports, and from these there is a stream of emigration to Malaya and the East Indies.

The Si Kiang Basin.—The entrance to this great region is guarded by Canton and Hong Kong. It is the great rice-growing area of China; densely populated valleys are surrounded by bare deforested hills. Canton was affected by foreign trade long before the remainder of China was open, and most of the Chinese found abroad are Cantonese or southern Chinese.

The Yunnanese Plateau.—Yunnan is a wind-swept plateau about the size of the British Isles but with a population of only 6-7,000,000. The valleys are fertile but unhealthy, so that the cultivators often live in villages perched high above their fields. The natural resources are great—especially in minerals—but are as yet but little touched.

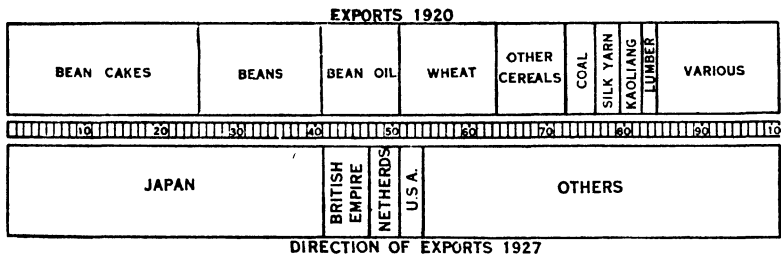


Fig. 97.—Manchuria: exports and direction of exports.

Manchuria.—Manchuria should really be divided into three regions—the eastern and western hills and the central plain. The climate of the plains is not unlike that of the Canadian prairies—very cold winters, hot summers, with a rainfall mainly in the early summer. Still thinly populated, there are vast opportunities for development; and Manchuria is destined to become one of the world's great granaries. Millet and wheat are the great food crops, together with beans. Emigration from the over-populated parts of China into Manchuria is hindered mainly by the religious ties of the Chinese; in the meantime Japan is doing her best to stake out a claim in a country which is able to supply food to her own densely populated lands; but the Japanese are in reality little attracted by the rigorous climatic conditions, so that Chinese settlers far outnumber the Japanese. The Kwangtung Peninsula, with the ports of Port Arthur and Dairen, belong to Japan. The principal

town of Manchuria is *Moukden*, whilst Harbin lies farther north on the Chinese Eastern Railway (as the portion of the Trans-Siberian Railway passing through China is called).

CHINESE OUTER TERRITORIES

Practically the whole of the dry interior of Asia—sometimes referred to as the Dead Heart of Asia—formed nominally a part of the Chinese Empire. The political ties between these vast tracts and the present Republican Government of China vary in importance. Tibet is virtually independent, Chinese Turkistan is more definitely Chinese; Mongolia, though claimed by China and recently divided, at least on paper, into a number of provinces, may become attached to the Russian Union.

Tibet.—Tibet consists essentially of a huge stretch of upland plains lying at a height of more than 12,000 feet above sea-level and surrounded by walls of mountains rising to even greater heights. The whole area is between 700,000 and 800,000 square miles, with a population, probably between 4 and 5 millions, nearly all of whom live towards the south-east, that is, between Lhasa and the Chinese border.

The country may be divided into four great physical regions :

1. The northern plains (Chang Tang), a tangled mass of plains and valleys with an elevation averaging more than 16,000 feet, and hence almost uninhabited, since no grain can be grown; but the vegetation of scanty grass is sufficient to support numbers of wild yaks, asses, sheep, and goats. This vast tract of country, 1,500 miles long and 400 or 500 broad, constitutes one of the main barriers of Central Asia.

2. Southern Tibet consists of the valleys of the Upper Indus and Sutlej and the great valley of the Tsangpo or Brahmaputra. This is Tibet proper; here are the chief towns and much of the population.

3. Eastern Tibet comprises the mountains and valleys between Chang Tang and the Chinese frontier. It is a land where grazing is abundant, there are extensive forests, and agriculture is possible on a considerable scale.

4. The Tsaidam Basin in the north-west is occupied by the uninhabited waste of the Tsaidam Swamp.

The climate of Tibet is not only exceptionally severe because of the elevation, but suffers from violent and bitterly cold winds throughout the greater part of the year. Over the wide open spaces in Tibet there is nothing to break their force. The extreme elevation of the plateau results in certain curious features. Rocks in the sun are often too hot to touch whilst it may be freezing in the shade. On the whole the precipitation in Tibet is low, except

close to the Himalayan border. The Tibetans are keen traders and the country is well supplied with trade routes, which concentrate on Lhasa. So long a forbidden city, Lhasa is a unique capital in many ways, since it is the stronghold of the Buddhist Priest-Kings of Tibet.

The Pamirs.—The Pamirs constitute a still loftier plateau than that of Tibet, but the plateau is dissected and a number of broad valleys, 12,000 to 14,000 feet above sea-level, lie among the tangle of mountains. The Pamirs are partly in Russian, partly in Chinese, and partly in Indian territory. The grassy, flower-covered valleys which are the Pamirs, properly speaking, in summer convey the rather false impression of fertility in a country where cultivation and permanent habitation are practically impossible.

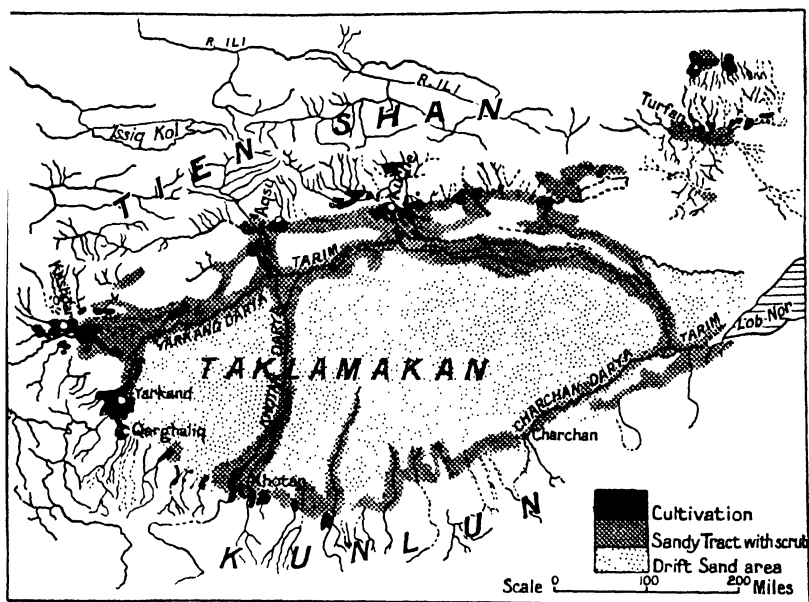


FIG. 98.—The Tarim Basin. (After Sir Aurel Stein.)

Chinese Turkistan (Sin-Kiang).—Chinese Turkistan corresponds roughly with the famous geographical region known as the Tarim Basin, a remarkable depression in the centre of the Dead Heart of Asia. Fig. 98 shows a map of the Tarim Basin and Fig. 99 a corresponding map of its eastern extension. It will be seen that the Tarim Basin consists of a central plain which is an outstanding example of a true desert: a tract of drift sand entirely without vegetation and entirely uninhabited. Surrounding this is a narrow belt of sandy country which derives a little water from the mountain wall and which is consequently covered with a dry type of vegeta-

tion. At intervals along this rim are oases of varying size ; where sufficiently large these oases support a considerable settled population. Then comes the surrounding rim of mountains : the Kunlun and the Nan Shan in the south, and the Tien Shan and the Pei Shan in the north. The area as a whole has two main interests : the first is that the great highways of commerce between Europe and the Far East in medieval times passed mainly through the Tarim Basin. The famous Southern or Kunlun Road followed along the southern line of oases through Yarkand and Kashgar and thence across the mountains to Samarkand in Russian Turkistan. The equally famous Middle Road followed along the northern line of oases from Turfan to Kashgar ; whilst only the North Road avoided the Tarim Basin by going farther northwards. The second

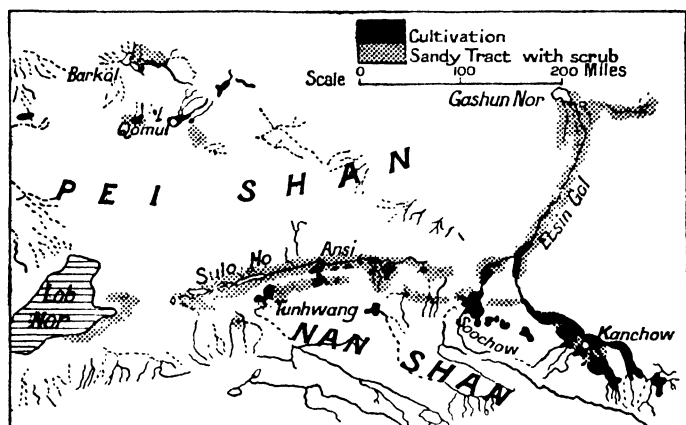


FIG. 99.—Eastern extension of the Tarim Basin.

point of interest is in the oases themselves. In all the larger ones there are fields of wheat, maize and cotton, picturesque winding roads bordered by poplars and willows, and pleasant little orchards of European fruit trees, the whole forming an amazing contrast to the wide desolation of the Basin itself. At the eastern end of the Basin should be noticed the depression of Lop, occupied mainly by the great salt-incrusted bed of the dried-up Lop Sea.

The two small basins, the Sulo Ho Basin and the Etsin Gol Basin, form what is really the eastern tail to the Tarim Basin and are followed by the main route into China.

Mongolia.—The vast indefinite tract of country known as Mongolia comprises the north-eastern half of the great central plateau of Asia, stretching to Siberia on the north, Manchuria on the north-east, China on the south-east, and Chinese Turkistan on the south-west. It is bounded by mountain ranges on the northern sides, but on the east it stretches really to the Khingan

scarp overlooking China proper. The total area approaches 2,000,000 square miles, the population is probably under a million. From the broadest possible point of view it consists of the great Desert of Gobi in the centre with a fringe of dry, grassy steppelands to north and south-east. The surface comprises a succession of great basins called talas, within which are a series of smaller basins (gobis). The whole area has probably been land for countless ages, and the basins represent old hollows which have been gradually filled in with wind-borne and water-borne materials, whilst the low ridges between the basins are the last remnants of the old mountain chains.

The climate of the country is severe in the extreme. In winter the temperature may drop to 40° or even 50° below zero, whilst the summer is but short, and over the whole area the precipitation is very small.

At the present time a distinction is drawn between Inner Mongolia, which fringes China and for all intents and purposes is a part of China, and Outer Mongolia, inhabited by nomadic steppe-dwellers, which is virtually independent. The centre of the innumerable caravan routes is the town of Urga in Outer Mongolia, 170 miles south of the Siberian town of Kiakhla, which will be mentioned again under Siberia. On the Chinese side the starting-point for most of the trade routes is the railway town of Kalgan. What lines the development of Mongolia will take in the future is uncertain. Most marked in the present development is the peaceful invasion of the borders of Inner Mongolia by Chinese agriculturalists; also, the slow tedious caravans of the wide stretches of Outer Mongolia are being replaced by motor transport, for already motor services run from China to Urga and from Urga to Siberia.

HONG KONG

Near the mouth of the Canton, or West River, lies the small island of Hong Kong, which has been a British Possession since 1841. The

island is separated from the mainland by a strait only half a mile wide, and on the shore of the mainland is Kowloon, part of the colony. In addition a considerable piece of the mainland has also been leased to Great Britain. The strait between the island and the mainland forms a wonderful harbour, and Hong Kong is visited by 25,000 vessels yearly. Hong Kong is a free port, there are no

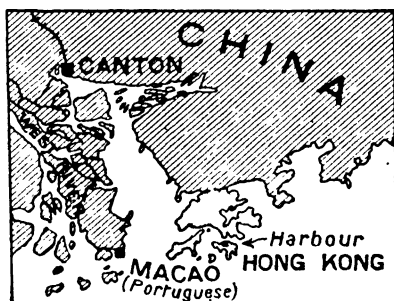


FIG. 100.—The position of Hong Kong.

customs duties, and much of the trade of South China passes through Hong Kong. The trade of Hong Kong is normally as large as that of the whole of South Africa. It was over £150,000,000 in 1923. The rich Chinese merchants are safer there under British rule than in China, and more than 850,000 Chinese live on the island or in Kowloon. There are also shipbuilding yards, sugar factories, tin refineries, and tobacco factories.

THE JAPANESE EMPIRE (NIPPON)

The island kingdom of Japan has often been called the "Britain of the East." Both Britain and Japan are groups of islands in temperate regions, lying one to the north-west and the other to the north-east of the great land mass of Eurasia. Japan Proper consists of four large islands forming a long curve from north-east to south-west. But included in the Japanese Empire are half the island of Sakhalin in the north, a string of small islands terminating with the large island of Taiwan in the south, and the large Peninsula of Korea on the mainland of Asia. The total area of the Empire is 261,000 square miles. Japan proper is 56·6 per cent. of this area; Korea is nearly a third; Taiwan 5·3 per cent.; Karafuto 5·3 per cent. The total population of the Empire in 1925 was 83,500,000, including 60,000,000 in Japan Proper; 19,500,000 in Chosen (Korea), and 4,000,000 in Taiwan.

JAPAN PROPER

Position and Size.—Japan Proper extends from 30° N. to 45° N., but running through the island of Taiwan (Formosa) is the Tropic of Cancer, whilst Japanese territory in Sakhalin extends to 50° N. The Japanese Empire thus covers a wide latitude, but the whole is nearer the equator than are the British Isles; 135° E. runs through the centre of the kingdom. The largest island of Japan (Mainland, or Honshu) is almost exactly the same size as the largest island (Great Britain) of the British Isles, but Japan Proper is larger than the British Isles, and the Japanese Empire has more than twice the area of the British Isles. Honshu is a third of the whole Empire, Hokkaido 11·6, Kyushu 6·0, and Shikoku 2·7 per cent.

Physical Features.—Nearly all parts of Japan are mountainous, and at first sight the arrangement of the mountains is irregular. Broadly, however, two parallel chains of mountains may be distinguished, each forming a long curve. The one curve lies close to the west coast, the other to the east coast. The midland valley which lies between the two chains is most clearly marked in the south-west, where it is occupied by the famous Inland Sea. Elsewhere it is obscured by great volcanic piles, the volcanoes showing a tendency to lie along lines at right angles to the folded

chains. There are numerous volcanoes in Japan ; the most famous being Fuji Yama (Mount Fuji) over 12,000 feet high, and the sacred mountain of the Japanese. Many other peaks rise to over 7,000 feet. Japan is, then, a very mountainous country—indeed, the

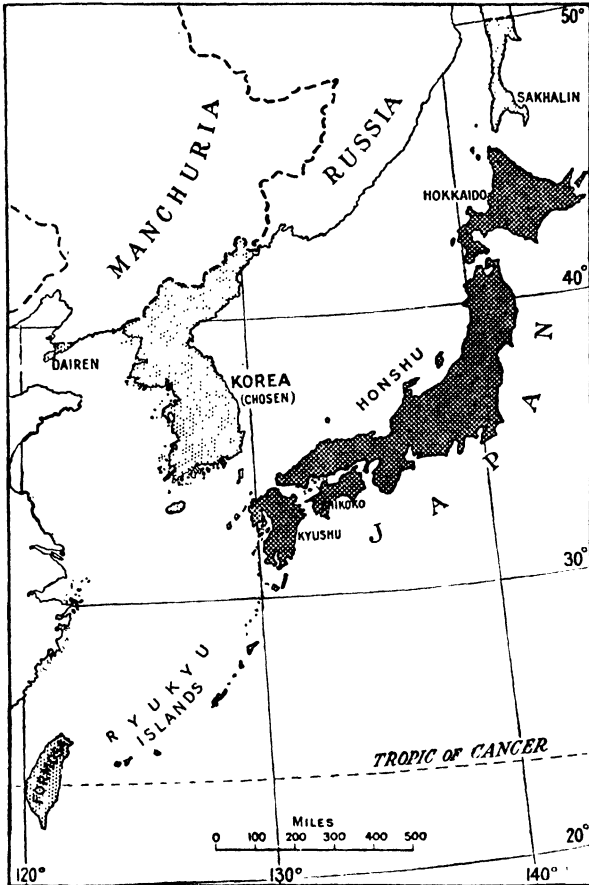


FIG. 101.—The Japanese Empire.

Japan proper is shown by the dark tint.

only extensive plain lies around Tokyo. As a result only about one-fifth of this densely populated country is capable of cultivation.

Geology and Minerals.—The geology of Japan is complex ; associated with the sedimentary rocks are coal fields and anthracite fields, as well as some small oil fields, whilst metalliferous deposits are associated with the plutonic intrusions of the folded chains and with the volcanic areas.

Coal occurs in two main areas ; in the island of Hokkaido in the

north, of which Hakodate is the port; in the island of Kyushu in the south, of which Nagasaki is the port. The output is about 30,000,000 tons annually—insufficient for home needs.

Petroleum is mined chiefly in a field near the west coast about 400 miles north of Tokyo. The output is insufficient for home needs.

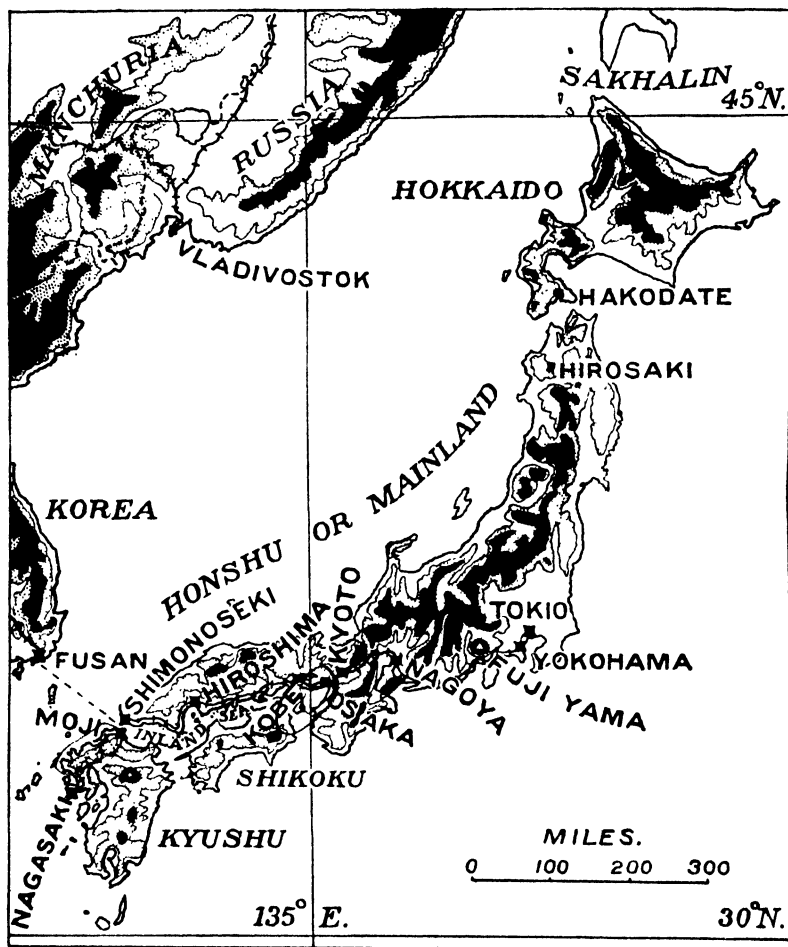


FIG. 102.—Japan. Land over 600 feet dotted; over 3,000 feet black.

Copper is mined in several areas, and Japan figures as the world's third largest producer. As in other countries, the production has varied considerably in recent years; it was 140,000,000 lbs. in 1924. Other mineral products include gold, silver, zinc, sulphur, lead and tin.

Climate.—In general, the climate—or more correctly the climates

—of Japan is comparable with that of China, but modified locally by Japan's insular position. As in China, there are strong north-west winds in winter, and feebler south-east winds in summer.

In winter the Japanese archipelago is warmer than corresponding latitudes on the mainland, and the country is divided roughly into northern and southern halves by the January isotherm of 32° . Although the west coast is exposed to the full force of the cold winds from the Asiatic mainland it is warmer than the east coast. The explanation of this surprising fact is found in the ocean currents.

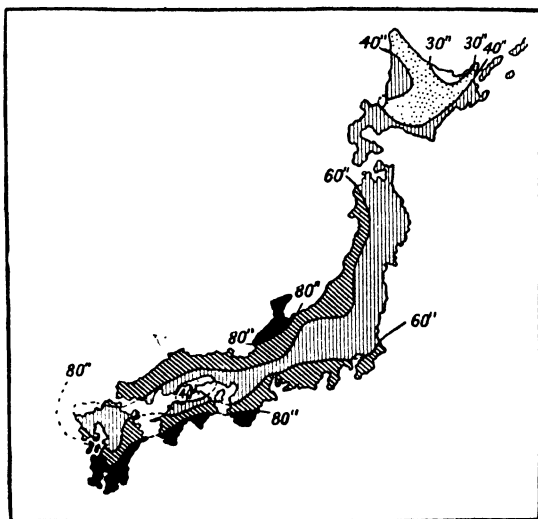


FIG. 103.—Japan : annual rainfall.

An important branch of the warm Kuro Siwo hugs the west coast, but the other branch is separated from the east coast by a wall of cold water. Winter temperatures (January averages) range from 15° in the interior of Yezo to 45° in the south of Japan, where the winters are mild. Over most of Japan the winter is dry, though not so dry as in north China. In crossing the Japan Sea the north-west winds, however, pick up a considerable amount of moisture and give a heavy precipitation, mainly in the form of snow, as they rise to cross the mountains. Some localities on the west coast have thus a greater rainfall in winter than in summer.

In summer, the July temperatures decrease steadily from just below 80° in the south to 60° in the north of Yezo. The monsoon rainfall has two maxima, one in June and July, the other about September.

Japan is sometimes compared with the British Isles as regards climate, but in reality a comparison with the New England coast is more apt.

Japan may, therefore, be divided into about four broad climatic regions :

(a) *Southern Japan*, or the sub-tropical region, embraces the islands of Kyushu and Shikoku, and Honshu as far north as lat. 35° , that is, roughly, the portion of the main island south of the mountain divide. This region includes all the coast round the inland sea and the south coast nearly as far east as Tokyo. The winters are mild (January average about 40° or

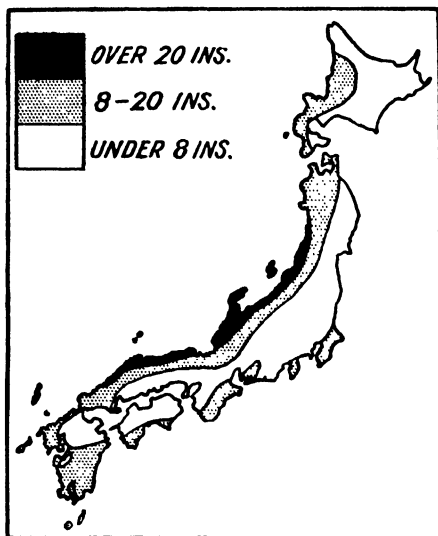


FIG. 104.—Japan: winter rainfall.
(During December, January and February.)

45°) and dry, while the summers are hot (July average 75° – 80°).

(b) *Eastern Japan* embraces Honshu east of the main divide and north of 35° and includes a small part of Southern Hokkaido. Winters are dry but cold, owing to the influence of the cold Okhotsk current. Over the northern half of the area the January temperature is below freezing, in the southern half between 32° and about 38° F.

(c) *Western Japan* embraces the whole of the west coast of Honshu and the southern portion of Hokkaido, and is characterized by its winter precipitation, cloudiness, and fog.

(d) *Northern Japan*, or strictly Northern Hokkaido, together with Sakhalin, has bitterly cold, raw winters below 25° in January, and rather cool summers, July average 66° or 68° . The same type of climate may be said to exist in the mountain region in the heart of Honshu.

Natural Vegetation.—The natural vegetation of Japan is forest. As a result of the mountainous nature of the surface nearly half of the whole country actually remains under forest. The forests of Japan (excluding the tropical forests of Formosa) are of three main types corresponding roughly with the climatic divisions just described.

(a) *Sub-tropical Forests* occupy the climatic region of Southern Japan and include broad-leaved evergreens such as the camphor tree and evergreen oaks, as well as deciduous oaks

and several species of pine. It may be noticed in passing that rice is permanently the cultivated grain of this southern region.

(b) *The Temperate Forests* occupy the climatic regions of Eastern and Western Japan, and are mixed coniferous and deciduous forests. There are various species of pine as well as oaks, chestnuts, and maples, and these forests are economically the most important in Japan. Large areas are found especially on the mountain slopes overlooking the Sea of Japan or the Pacific Ocean.

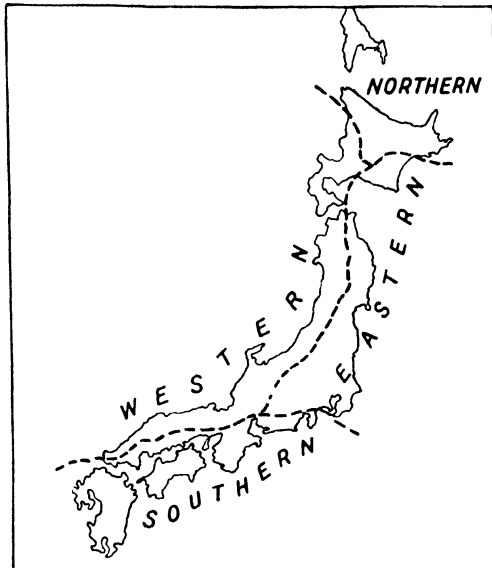


FIG. 105.—Japan: climatic regions.

(From Stamp's *Asia*, by permission of Methuen & Co., Ltd.)

(c) *The Cold Temperate Forests* cover most of Hokkaido and Sakhalin and occur also above 4,000 or 5,000 feet on the mountains of Honshu. They are essentially coniferous forests.

In Japan proper, out of the 48½ million acres of forest, 22 millions are privately owned, 18½ million State-owned, and nearly 3 million owned by the Imperial household. Apart from 500 million cubic feet of timber, large quantities of firewood, bamboo, and charcoal are produced to a total value of approximately £35,000,000. Of the timber trees there are three of overwhelming importance: sugi (40 per cent. of the value), pine, and hinoki. Despite the area and importance of her forests, however, Japan figures on the balance as a timber importer.

Agriculture.—Every available piece of land which can be used is used for agriculture in Japan, but even then there are only 18·7 million acres of cultivated land (including a small proportion of

pasture) to support a population of 60,000,000. This may be compared with 25·7 million acres of cultivated land in England and Wales with 38,000,000 people. Thus, although intensive cultivation is assiduously practised, Japan is becoming more and more dependent on foreign supplies of foodstuffs. Therein lies the importance to Japan of the undeveloped lands of Manchuria. In order to economize valuable land villages are often built on steep hillsides and the hill is cut into tiny fields. Three-quarters of the arable land is cultivated by peasants. The principal food grain is rice, which can be grown all over the south because of the higher summer temperature, and which covers more than 40 per cent. of the total cultivated land. Wheat, barley, and rye (rye in the cold north) together cover as much ground as rice. The other important crops are tea and tobacco. Japanese tea is different from that of India or Ceylon. A large proportion of the tea is exported to the United States, where it is more in vogue than in other parts of the world. Considerable numbers of cattle, nearly 4,000,000, are kept, but Japan is so carefully cultivated that there is little land left for sheep or goats. Large numbers of mulberry trees are grown for the sake of the silkworms, for the production of silk is a very important industry. The silkworms are reared by the same farmer who grows wheat, an interesting example of mixed farming. Japan produces 75 per cent. of the silk of the world (not including China).

Fisheries.—The continental shelf around Japan is one of the great fishing grounds of the world, and fish is an important article of Japanese diet. Nearly 1,500,000 people are engaged in the industry, and there are nearly half a million fishing-boats in Japan, whilst steam trawlers are gradually coming into use. The total value of the fisheries is even greater than that of the British fisheries, that is, between £25,000,000 and £30,000,000. Food fishes include herrings, sardine, anchovy, mackerel, and many others characteristic of Japanese waters, such as the bonito. *Bêche-de-mer* and sharks' fins are exported to China, while seaweeds are collected for manufacture into jelly, isinglass, and soup relishes. Japan has also a unique industry in the breeding of pearl oysters and of culture pearls. Grains of mother-of-pearl are introduced between the shells of three-year-old oysters, causing the oysters to secrete a pearl round the irritating object. In this way in four years a pearl of considerable size is formed, which is indistinguishable from a pearl naturally formed.

Manufactures.—The principal industries are the manufacture of cotton, silk, and woollen goods, paper, earthenware and glass, and matches. Japan is noted for cheap cotton and silk goods, as well as cheap toys, matches, etc., but the quality is, broadly speaking, below that of other countries. The industrial revolution in Japan occurred mainly after the China-Japan War of 1894-5. The growth

of factories has been extremely rapid, especially during the Great War, but now Japan is finding it more difficult to maintain her export trade. Competition is particularly keen in Eastern markets, such as India. Japan is now concentrating her attention on the improvement of the quality of her goods. Just like Great Britain, Japan has to import much of the raw material for her industries—especially cotton (from U.S.A. and India), wool (from Australia), and iron.

In the development of manufactures Japan has made considerable use of hydro-electric power. This is not surprising seeing that the country is mountainous, has a good rainfall, and consequently numerous swift streams, and is at the same time deficient in coal. Something like 15,000,000 H.P. are developed, mainly from the rivers of the central part of the mainland, conveniently situated for supplying Tokyo and Yokohama in the eastern zone, Kyoto, Osaka, and Kobe in the western zone.

The value of the produce of the principal Japanese industries is as follows (10 yen = £1).

	1923	19—
	£	
Cotton piece goods	57.0 millions	
Silk piece goods	4.5 „	
Japanese paper	5.0 „	
European paper	10.4 „	
Matches	1.5 „	
Earthenware	6.5 „	
Lacquered ware	2.8 „	
Matting	3.0 „	
Leather	2.4 „	
Oil	3.4 „	
Knittings	4.7 „	

Population.—The Japanese are the most progressive and probably the cleverest of all the Mongolian races. They have adopted and often improved all the great inventions of western nations. They have become a first-class power, with the third largest navy in the world, and all the men who are physically fit are trained either in the army or navy. One of the remarkable features of Japanese progress in the last 50 years has been the expansion in population from under 36,000,000 in 1879 to over 60,000,000 in 1927.

The indented character of the coast-line has had the same effect as in England. The Japanese are a seafaring people, and have a large merchant navy. The westernization of Japan has had the effect of causing a curious contrast between the many large industrial cities, quite like the manufacturing towns of Europe or America, and the quaint old country towns and villages.

Cities.—*Tokyo*, the capital, is one of the world's greatest cities, with 2½ million people. It was partly destroyed by the earthquake in 1923. It is a busy manufacturing centre.

Osaka is the principal manufacturing city of Japan (the "Manchester" of Japan), and is also a port. *Kobe* is the second port of Japan. *Kobe* is close to *Osaka*, and the whole forms one great manufacturing district. *Kyoto* is the old capital of Japan, and a fine historic city. It has, however, moved with the times and developed numerous manufactures. *Yokohama* is the largest port of Japan; it is not only the port of *Tokyo*, but has large manufactures of its own. It was entirely destroyed by the earthquake and fire of 1923, and most of the merchants moved to *Kobe* or *Osaka*. They are gradually returning and the city is commencing to be restored. *Nagoya* is another modern centre. *Nagasaki* is a coal port and an important naval station, and the principal town on *Kyushu*. *Hiroshima* is a large port on the Inland Sea, whilst *Moji* and *Shimonoseki* are twin ports at the western entrance to the Inland Sea. They are to be connected by a railway tunnel under the straits. It is from here that boats go across to Korea. *Hakodate* is the principal town and port of *Hokkaido*.

Railways.—Japan is well served by railways on the gauge of 3 feet 6 inches. One of the most important lines runs through the country and connects the principal towns—from *Shimonoseki* to *Hiroshima*, *Kobe*, *Osaka*, *Kyoto*, *Nagoya*, *Yokohama*, and *Tokyo*. The direction of many of the railways is controlled by the mountainous nature of the country.

Foreign Trade.—Care should be taken to distinguish between foreign and inter-imperial trade. Broadly speaking, it may be said that the Japanese Empire can be divided into two zones; a densely populated, industrialized inner zone, and an outer zone, the function of which is largely to supply food and raw materials to the inner zone. *Formosa*, *Chosen*, *Hokkaido*, and *Karafuto* all belong to the outer zone; Old Japan (*Honshu*, *Shikoku* and *Kyushu*) forms the inner ring. Figs. 106 to 110 explain Japanese foreign trade.

THE REGIONS OF JAPAN

The complex physical features of Japan make it difficult to distinguish natural regions as we have done elsewhere in this book, and it will be simpler to describe the principal islands.

Kyushu.—*Kyushu* is the southernmost island of the three which constitute Old Japan and second in size to the mainland. It is roughly the same size as *Formosa* (14,000 square miles). It consists of a confused mass of mountains mostly volcanic in origin and some still active. The famous *Aso-san* lies in *Kyushu*. The coastline is very irregular and there are innumerable gulfs and bays

of remarkable beauty. The coincidence of the rainy and hot seasons, with temperatures ranging up to 80° , has resulted in the weathering of

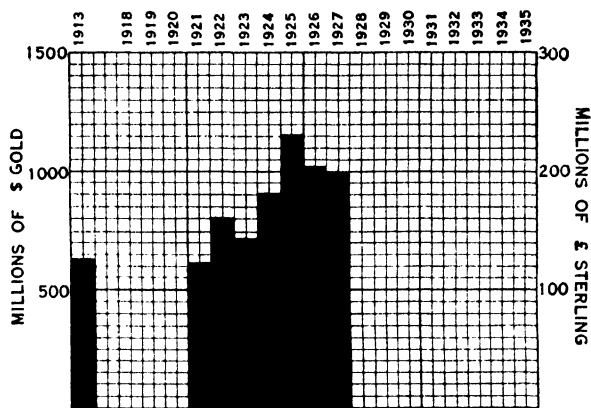


FIG. 106.—The exports of Japan.

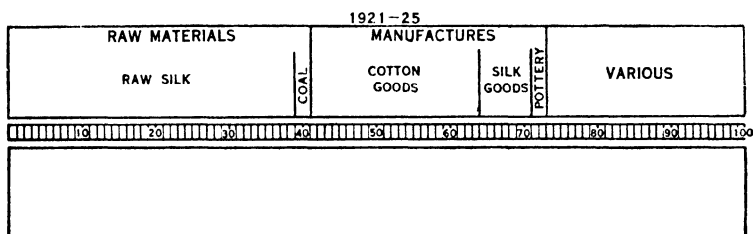


FIG. 107.—The exports of Japan.

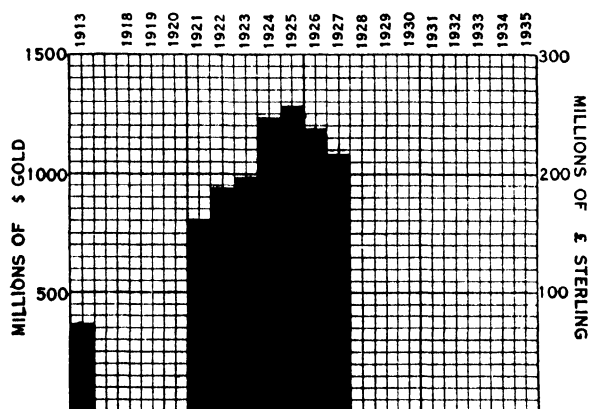


FIG. 108.—The imports of Japan.

many of the volcanic rocks into a deep rich soil. Everywhere there are small rich valleys and well-cultivated terraced mountain slopes,

separated by the characteristic barren moorland of the Japanese islands overlying volcanic ashes. The island enjoys a very mild climate and produces in abundance sub-tropical crops and fruits. The important coal-field near Nagasaki has already been mentioned ; Kyushu has also valuable kaolin deposits which have given rise to a great ceramic industry (including the well-known Arita- and Satsuma-ware).

Shikoku.—The island of Shikoku is smaller than Kyushu, but, like it, has a very mountainous surface. The climate is even milder ; sub-tropical evergreen forests with camphor trees, camellias, and laurel-leaved oaks occur at the lower levels, whilst the hillsides

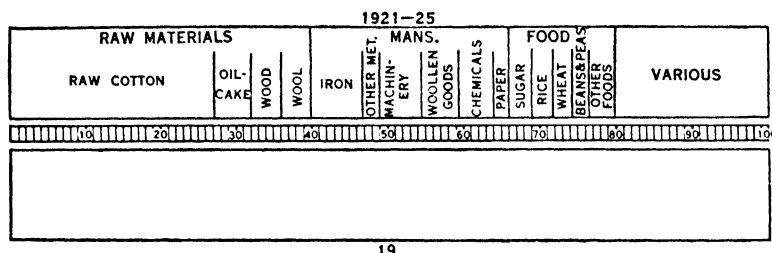


FIG. 109.—The imports of Japan.

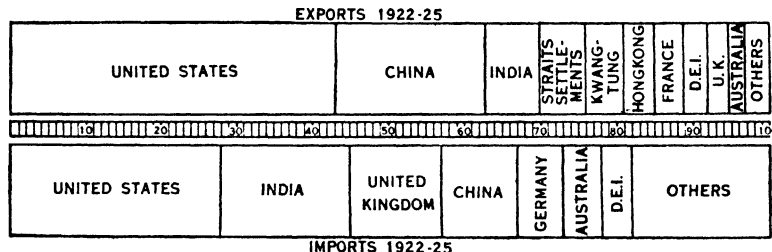


FIG. 110.—The direction of Japanese foreign trade.

are clothed with deciduous forests of horse-chestnut, beech, ash, oak, and magnolia. This is the part of Japan where two crops of rice are obtained. Shikoku has copper mines.

Honshu or the Mainland.—Reference has already been made to the physical features of Honshu. Very broadly, the island falls just into two portions ; the “more anciently settled and highly developed south and east, and the wilder, less productive, north and west.” Between the two lies the main mountain backbone. Then there is a broad division into western and southern Japan, with its palms and bamboos, and northern Japan, the region of cold winters. Thus four regions can be separated, meeting in the central knot of mountains. There are only two alluvial plains of any size—those of Tokyo and Osaka. In western Japan the east-west backbone is

a single one ; barren, rocky spurs thrown off on the north and on the south separate the narrow cultivated valleys which only embrace about 5 per cent. of the total area. In northern Japan the mountains run in an approximately north-and-south direction.

Hokkaido or Yezo.—Hokkaido is roughly the same size as Scotland. A bleak, mountainous island under snow and ice for four or five months of the year, with its rivers radiating from a central mountain mass, it has for long defied efforts at close settlement and remains relatively thinly populated. The prosperity of the ports of Hakodate and Muroran is largely due to the coal fields. Elsewhere also the Japanese settlers are concentrated around the coasts except in the agricultural plain of Ishikari (centre Sapporo, port Otaru). The old-established fisheries are still very important.

KOREA, OR CHOSŌN

is a large mountainous peninsula. After the war between China and Japan in 1894, it became independent. In 1910 it was annexed to the Japanese Empire, partly in order that it might not be seized by Russia. The inhabitants, Koreans, number 19,500,000 (1925) and since 1919 have enjoyed political equality with the Japanese. Korea is essentially an agricultural country and grows more rice, barley, peas, beans, and cotton than are needed for home consumption and so is of the utmost importance to Japan. Korea also produces huge quantities of raw silk to feed Japanese industries. Korea is rich in minerals, including iron ore, which are so badly needed by Japan. The country is still largely undeveloped, but tremendous strides have been made since 1919. The great need is improvement of communications. The principal town is *Seoul* ; whilst the port of *Fusan* is only about 120 miles from Shimonoseki, in Japan. Over 90 per cent. of the exports go to Japan, which supplies three-quarters of the imports. The leading export is rice.

TAIWAN

became part of the Japanese Empire after the China-Japan War in 1895. It is being carefully developed by Japan ; mining and agriculture are steadily progressing. Taiwan is the tropical possession of Japan and hence is able to provide a supply of raw materials and foodstuffs which cannot be produced elsewhere in the Empire. Of these sugar, maize, jute, and camphor are the chief. Rice and tea are produced and exported. Mining is also making steady progress and the production of coal exceeds $1\frac{1}{2}$ million tons (1924). The island has an area of 14,000 square miles and a population of 4,000,000, including 183,000 Japanese settlers.

KARAFUTO, OR JAPANESE SAKHALIN

consists of that portion of Sakhalin lying south of 50° N. There are large areas fit for agricultural and pastoral development, as well as a vast forest area of larch and fir. The very severe winters tend to deter settlement, but Karafuto is capable of becoming an important asset to the empire, especially as the island has considerable mineral wealth, including coal and gold. The petroleum of Sakhalin is mainly in the northern or Russian portion.

KWANTUNG

is the southern part of Liaotung Peninsula which has been leased from China. Its importance is mainly from its strategic position. Dairen has a fine harbour, and both Port Arthur and Dairen are connected by the South Manchurian Railway with Moukden, Harbin, and the Trans-Siberian. The South Manchurian Railway is almost entirely a Japanese company. Its function in the opening up of Manchuria may be compared with that of the Canadian Pacific Railway in Canada. Agricultural lands, coal mines, iron and steel works and many other activities are controlled by the railway.

ASIATIC RUSSIA

The Russian Empire prior to the Revolution of 1917 included practically the whole of Asia lying to the north and west of the great central mountainous triangle of the continent, together with considerable tracts of the mountains themselves. The south-western portion is generally known as Russian Turkistan and the whole of the remainder as Siberia. It is desirable to consider these two huge areas separately.

SIBERIA

Position and Size.—Siberia lies between the inhospitable wastes of the Arctic Ocean on the north and the barren mountains of the Dead Heart of Asia on the south. The natural outlets of the whole tract are therefore either to the west through European Russia or to the east across formidable coastal mountain ranges to the Pacific Ocean. Between these eastern and western exits the distance is approximately 5,000 miles, whilst from north to south the width of the country is in places as much as 2,300 miles; hence the two chief difficulties in the way of Siberian development—inaccessibility and vastness of area. Even so it is not too much to state that Siberia with its area of 5½ million square miles is the most important tract of land in temperate latitudes still awaiting adequate development. The great softwood forests are at present

almost untouched, mineral resources almost unexplored, and the rich farming lands tenanted by a population only about one-third of that necessary for their proper development. Indeed, this part of Siberia may be compared with the prairies of Canada as they were a few decades ago. The total population of Siberia is estimated at about 15 millions.

Physical Features and Structure.—Although broadly speaking the whole of Siberia belongs to the great northern triangle of lowland of the continent of Asia, only a portion of the country can be described as a low-lying plain. It is convenient first of all to divide Siberia into three—Western, Central and Eastern Siberia.

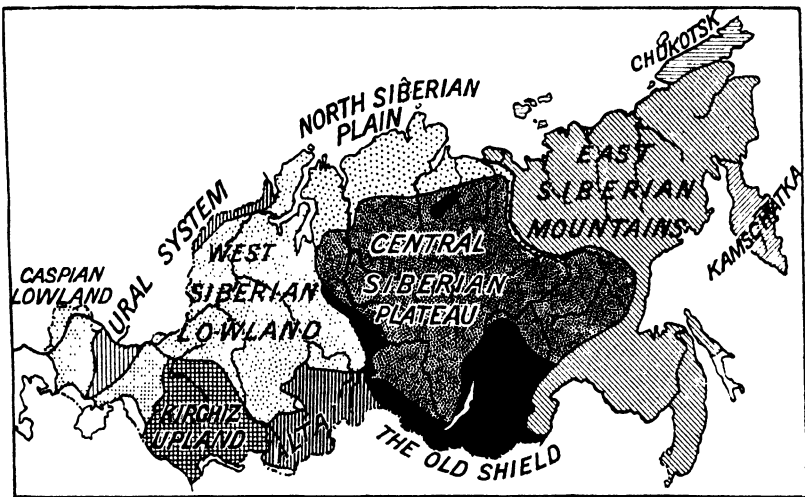


FIG. 111.—Siberia : structural regions (after Schultz).

Western Siberia, stretching from the Urals on the west to the Yenisei River on the east, comprises three divisions :

- (i) The West Siberian Lowlands, a huge plain corresponding roughly with the basin of the River Ob, and which is a true lowland subject to severe floods and covered mainly with recent geological deposits.
- (ii) The Kirghiz Uplands lying to the south of the plain and consisting of old folded rocks worn down to a plateau.
- (iii) The Altai mountain region lying along the Chinese borders.

Central Siberia, stretching from the Yenisei River to the Lena River, comprises :

- (i) The relatively small North Siberian Plain along the borders of the Arctic Ocean.

(ii) The Middle Siberian Plateau, a vast area of ancient rocks worn down in the course of ages to the level of a low plateau, comparable in character to the Laurentian Shield of Canada and known to geologists as Angaraland.

(iii) The mountainous region around Lake Baikal, known as the Old Shield of Asia, and including the border ranges and actual portions of the Central Plateau of Asia.

Eastern Siberia, lying east of the Lena River, comprises :

(i) The mountain lands of Eastern Siberia, with several curvilinear festoons of lofty mountains still largely unexplored, but of which the Stanovoi Mountains and the Verkhoyansk Mountains are the best known.

(ii) The Peninsula of Kamschatka, and

(iii) The Peninsula of Chukotsk.

These physical divisions have been shown in the accompanying diagram (Fig. 111).

Climate.—The climate of the whole of Siberia is essentially continental. The winter is very long and very cold, but the air dry and bracing and the skies cloudless, snowfall in the winter as a rule not exceeding a few inches. In winter the coldest spot on the earth's surface, or the "cold pole" of the earth, as shown in Fig. 5, is located in Eastern Siberia. From this cold pole there is a steady increase in temperature in all directions. Resulting from the extreme coldness in the interior of the continent there is a very marked high pressure centre from which winds blow outwards in all directions, and these winds are responsible for the small winter snowfall of Siberia. In summer the whole of Siberia is comparatively warm, and there are inblowing westerly winds, though they are but light and the rainfall is slight or moderate. Over most of the country the total precipitation is between 10 and 15 inches, but, coming as it does in the early summer, it is nearly all available for crops. An important factor in Siberian geography is the direct result of climate. The large rivers all flow northwards to the Arctic Ocean, that is to say, towards the cold regions. In the spring the ice on their upper courses melts long before the warmth has affected the lower courses, with the result that flood waters are unable to escape through the blocked mouths and overflow the banks in the middle portions of their courses, giving rise to enormous flooded areas. This is one of the difficulties in the exploitation of the forest country. In discussing the climate of Siberia it is very common to over-emphasize the long, severe winter, but it should be noted that the warm summers permit agriculture to be carried on far to the north, just as one finds in the prairies of Canada.

It is possible to divide Siberia into a number of climatic regions. The primary divisions are those distinguished on Fig. 113, *i.e.*

(1) the Tundra climate, (2) the Cold Temperate climate, (3) the Steppe climate, and (4) the Temperate Desert climate.

The *Tundra Climate* shares with the rest of Siberia its very cold winters, but is distinguished by summers too cool for agriculture. Indeed, the ground is frozen hard and only the surface

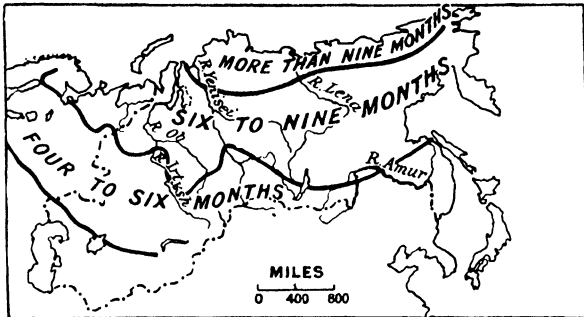


FIG. 112.—Map of Siberia showing the duration of the period during which the rivers are frozen.

thaws for a few months in summer, becoming water-logged as a result of the solid sub-soil. The vegetation of this belt is tundra, in the low-lying areas moss being important; in the drier regions lichens are abundant, especially the famous “reindeer moss.”

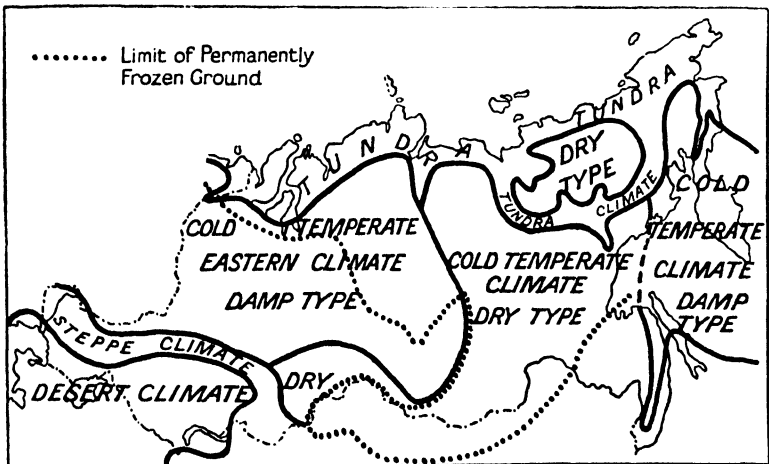


FIG. 113.—Siberia: climatic divisions (after Schultz).

In sheltered places there are a few dwarf trees, such as birches and willows.

The *Cold Temperate Climate* has again a cold winter but a

comparatively warm summer, though insufficiently long and warm for agriculture. There are three sub-regions :

(a) Western Siberia, with January temperatures between -15°F. and 10°F. , where the vegetation cover is a coniferous forest or taiga consisting of Siberian fir and larch. Where this forest grows on the West Siberian lowland, it may be described as a swamp forest.

(b) Central Siberia, with the coldest winters known anywhere and an extreme range of temperature, but with a dry air and low rainfall. Here the vegetation cover is again a coniferous forest, but marshy areas are rare and Siberian fir and a different species of larch are the chief trees.

(c) Eastern Siberia (coastal area) differs in having a much damper type of climate, though the winters are not so cold and the summers cooler. Here the vegetation is again coniferous forest, with the Eastern larch as chief tree.

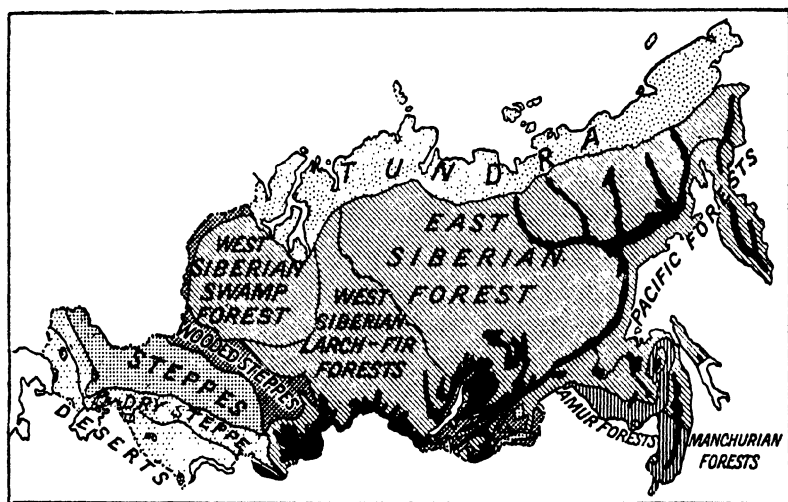


FIG. 114.—Siberia: natural vegetation (after Schultz).

The Steppe Climate, or Temperate Continental climate, enjoys a rainfall of between 8 and 16 inches, coming mainly in spring and early summer. The character of the rainy summer makes the climate favourable for grass, and this is the region, normally covered with grassland, which is becoming a great farming centre of Siberia. Actually the farming belt stretches beyond the grasslands northwards and embraces the strip of country intermediate in character between grassland and forest and which is sometimes called the Grove Belt or Wooded Steppe.

The Temperate Desert Climate stretches from the extreme south

of Siberia into Turkistan and has a rainfall of less than 8 inches. The winters are cold for the latitude, but the summers extremely hot. The vegetation is mainly that of a very dry steppe, with dwarf, thorny bushes.

Population.—Before dealing with the agricultural development of Siberia, it is necessary to analyse the character of the population. Throughout the country as a whole the average density is only about three persons per square mile, and, broadly speaking, the inhabitants fall into two groups, (1) the aborigines, who are mostly Mongolians and consist of a number of primitive tribes scattered through the country, and (2) the immigrants, who

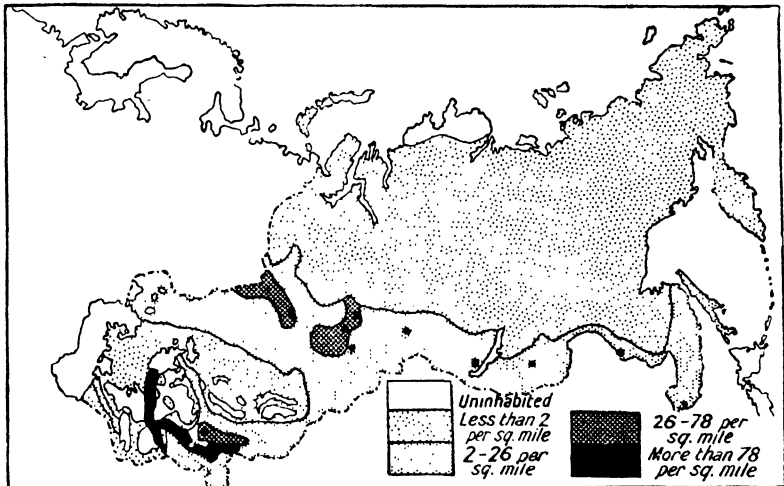


FIG. 115.—Asiatic Russia: density of population.

(Towns over 50,000 marked with a dot.)

started to colonize the south four centuries ago, but who did not start arriving in numbers until about 1896, and whose settlement was very greatly encouraged by the completion of the Trans-Siberian Railway in 1902. Every one, of course, has heard of the use of Siberia as a penal settlement, but it is not always remembered that only a small proportion of the exiles were criminals. A very large number were religious exiles, who from the very nature of their "crime" were enlightened and progressive people, and have done a great deal towards the effective opening up of the country. Nevertheless it was not until colonization by free settlers was encouraged that the country began to make real progress. Settlement is concentrated in, one might almost say restricted to, the steppe land belt and the belt immediately to the north where agriculture is possible.

Here there are three towns with a population of over 100,000—Omsk (160,000), Novo-Sibirsk (120,000) and Vladivostok (108,000)—whilst there are six others with a population of over 50,000. The position of the chief towns in relation to the Trans-Siberian Railway should be carefully noted. It is interesting to notice that opposition to the railway resulted in its skirting some of the larger settlements, much to the later regret of the inhabitants. Tomsk, for example, is off the main line, but has since been connected by a short branch line.

Agriculture.—In general the conditions in the agricultural belt of Siberia are comparable with those in the prairies of North America. It is probable that well over 21 million acres are under cultivation. Of this vast area grain crops occupy 94 per cent. (spring wheat, 48 per cent.; oats, 28 per cent.; rye, 14 per cent.; barley, 4 per cent.), followed by potatoes, 2 per cent., flax and hemp and miscellaneous, 4 per cent. The soils vary in character; the best black soils comparable to the soils of the Black Earth region of Europe are devoted largely to wheat, the poorer reddish soils mainly to rye and other crops. It has been estimated recently that there is additional land in Siberia suitable for crop raising of 200 million acres, sufficient to accommodate at least 20 million people, and the acreage under wheat alone might reach 150 million acres, or six times the total at present under that crop in Canada. Thus Siberia is not without reason sometimes called the “store-house of the future.” The main problem in development, apart from the difficulties resulting from the present political administration, is the cost of transport.

Livestock is especially important in the Kirghiz steppelands, that is to say, the southern portion of Siberia proper, whilst very important indeed is the rapid rise of co-operative dairying, both in the steppelands and the fertile valleys amongst the mountains of the border. Before the War, Russia ranked second to Denmark in the quantity of butter exported, and there is no doubt that the output could be enormously extended. In addition to an estimated number of over 11 million cattle, Siberia has 15 million sheep, 3½ million pigs.

Forests.—Siberia constitutes the greatest area of untouched soft-wood forests in the world, the total area estimated to be over 1,000,000,000 acres. Nevertheless this stupendous area is unlikely to be seriously exploited in the near future. There are several reasons for this statement. Inaccessibility is the chief difficulty; except in the forests of the Amur Basin and the Pacific slopes, the waterways flow northwards to the frozen Arctic. They are not only very slow but are only available for a few months of the year. Even if it were possible to remove the timber extracted by railway the expense would be too great. What Siberia would

seem to need is an east to west waterway, though even then traffic would be restricted to a few months of the year. In considering the vast area of Siberian forests it must also be mentioned that the swampy nature of the ground, especially in Western Siberia, probably means that much of the timber is of very indifferent quality, whilst the extremely hard winters of Eastern Siberia result in a very slow growth, consequently the forest could only be worked over at infrequent intervals. The present state of development of the timber trade might be gauged by seeing that in 1913 the entire timber production was only valued at about £400,000. Of perhaps greater importance is the fur trade associated with the same area. In many regions trapping is the chief means of livelihood of the people, and, as in all parts of the world, the number of wild animals is rapidly diminishing. The sable is already a rare animal, squirrels are fast becoming scarce.

In many of the Siberian rivers and lakes fish are abundant, but the important fisheries are those of the Pacific coast. Much of the trade is in the hands of the Japanese, and 90 per cent. of the catch is salmon.

Minerals.—The mineral wealth of Siberia is second only to its agricultural resources. There are the metallic minerals associated with the mountain border and the Old Shield of Asia, and the coal resources associated with the areas of younger rocks. Amongst other minerals gold is very widely distributed, the most important areas of exploitation up to the present being in the Lena Basin, where the pre-War production was about a million and a half ounces per year, and the deposits worked were all placer deposits. Copper, zinc, lead and silver are all known to occur in quantity, especially in the Altai region. The coal resources of Siberia have been estimated to be equal to half of those of the whole of Europe, and the coal basins are widely distributed. In addition to the known basins, amongst which may be mentioned the Kuznetzk Basin in Tomsk Province and the Irkutsk Basin, there is an enormous tract of country known as the Tungusk Basin, over the whole of which coal is believed to occur. In 1917 the production of the first two mentioned basins was about 3,000,000 tons, and in addition smaller but more easily accessible areas near Vladivostok yielded 600,000 tons. Petroleum occurs in the Russian portion of Sakhalin and is believed also to occur in Kamschatka.

Communications.—With the exception of the important river the Amur, the rivers of Siberia flow from north to south. The outlets of the country are to the east and west; consequently railways and roads must provide the principal means of exit from the country. Siberia's foreign trade may be said to have commenced with the completion of the Trans-Siberian Railway. It is the longest single railway line in the world: from Leningrad

to Vladivostok is over 5,400 miles, and the cost of construction was approximately £200,000,000. The course of the railway should be carefully noticed in Fig. 116; in Western Siberia it passes through the fertile Grass Belt, climbing the mountain border to Irkutsk and Lake Baikal. At first the trains were ferried across Lake Baikal or taken across the ice in winter, but later the line was built round the southern shore of the lake. From Chita to Vladivostok there are two routes, one passing entirely through Russian territory, the other passing through China, *via* Harbin, and affording a shorter route. There are short but important branches, one of which goes to Kiakhta and is to be extended to Urga, the capital of Mongolia. In the west the Trans-Siberian Railway is connected with the important lines running through

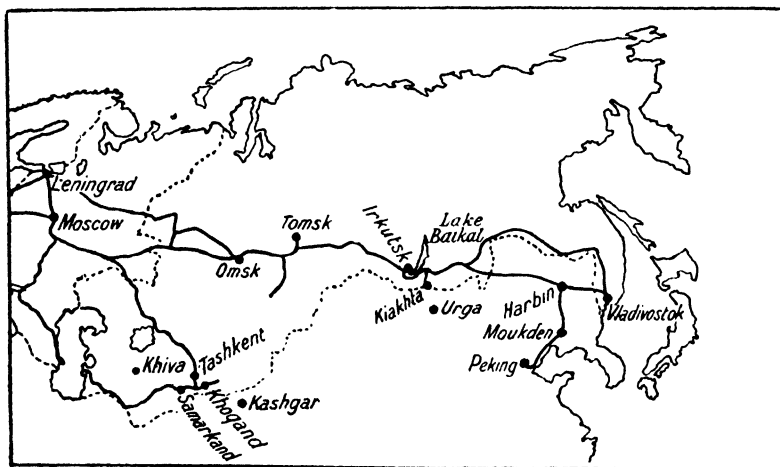


FIG. 116.—Asiatic Russia: communications.

(Novo-Sibirsk, mentioned in the text, lies on the Trans-Siberian Railway, south-west of Tomsk.)

The Turk-Sib Railway, to connect Siberia and Turkistan, is now (1930) under construction.

Turkistan. Almost as famous is the great Siberian road from Moscow to Vladivostok, the road followed by so many thousands of miserable exiles. Although Siberia has very few metalled roads, the flatness of much of the country and the low rainfall mean that many of the ordinary tracks are open to motor traffic during the greater part of the year. Thus there is a great belt on either side of the Trans-Siberian Railway where horse-drawn vehicles and motors form the principal methods of transport. In the forests and the frozen country farther north it is necessary to rely upon dogs or reindeer, whilst farther south in the desert and semi-desert areas camels, asses and mules are the chief transport animals.

Present-Day Organization and Trade.—Nearly all Siberia

now forms part of the Russian Socialist Federal Soviet Republic (R.S.F.S.R.) which is the largest unit of the Union of Socialist Soviet Republics (U.S.S.R.), but there are a number of other Soviet republics occupying certain tracts, of which the most important are the Yakut Republic (North-Central Siberia) and the Mongolo-Buriat Republic occupying the country round Lake Baikal. It is almost impossible to give any account of the present-day foreign trade of Siberia. In the first place it is difficult to obtain reliable figures, in the second place the present trade can scarcely be regarded as a true index of the character and possibilities of the trade. It may be said, however, that Siberia is in many respects the counterpart of Canada, and that if more developed than it is at present, the export trade of Siberia would resemble closely that of Canada. There are the vast agricultural lands with their production of wheat and other cereals and dairy products, there are the enormous forests with their possible export of timber and wood pulp, there are the fisheries, and there are the innumerable mineral deposits.

RUSSIAN TURKISTAN

Russian Turkistan lies between the Caspian Sea on the west, the great mountain divide of the Pamirs and the Tien Shan on the east, Siberia on the north, and Persia and Afghanistan on the south. Nearly three-quarters of the area consist of desert plains, whilst much of the remainder is occupied by lofty mountains. The valleys between the mountains, however, and those portions of the plains which can be irrigated form important, often well-populated, and potentially productive areas. In considering the country, the following six units may be distinguished :

1. The plateau of Ust Urt, lying between the Caspian and the Aral Seas, a semi-desert area with a sparse covering of vegetation after the spring rains.

2. The desert of Kara-Kum, occupying much of the south of the country and forming an irregular plain covered with sand-dunes.

3. The southern borderland stretching along the frontiers of Persia and Afghanistan ; where water is available there are irrigated fields and gardens, but the area so rendered fertile is not extensive, though it has been considerably opened up since the construction of the Trans-Caspian Railway.

4. The desert of Kysyl-Kum lies between the Amu-Darya and the Sir-Darya, that is, between the two chief rivers flowing into the Aral Sea. Special interest attaches to those areas along the rivers capable of irrigation and therefore regarded as having an important future, especially that tract along the Tashkent railway known as the Golodnaia steppe.

5. The Plain of Ferghana is a small valley, with its long axis from east to west, almost completely surrounded by mountains. The snows from the surrounding mountains furnish abundant water, and this is the most flourishing region of Turkistan and the centre noticeably of cotton cultivation. It is historically important since one of the main trade routes of medieval times passed through the valley on its way from Samarqand to Kashgar in Chinese Turkistan.

6. The mountain border occupies most of the remainder of Russian Turkistan. Some of the valleys are famous for their fine pastures where dairy farming is or may be of very considerable importance.

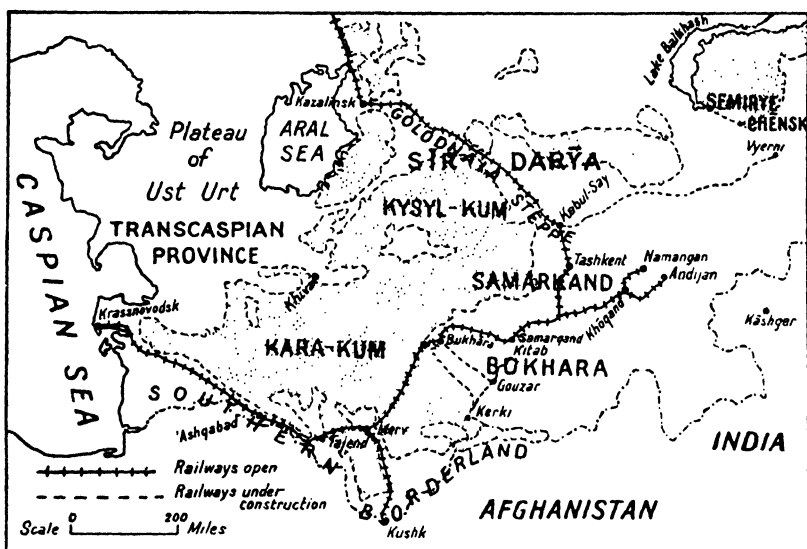


FIG. 117.—Russian Turkistan, showing desert areas (dotted) and railways (after Woeikof).

The total population of Russian Turkistan is probably about 10 million. Except for the oasis of Khiva, most of the population is in the east or along the northern border where there are large towns, notably Tashkent (300,000), Samarqand (100,000) and Khoqand (70,000). The people are almost entirely Mahomedans, so that Russian Turkistan differs from Siberia in that it is really a foreign possession and not a colony. The natural outlet of the country, however, is to European Russia, with which there is direct railway communication, and the country supplies Russia with considerable quantities of cotton (probably occupying more than a million acres), whilst the native population is supported on home-grown crops of wheat, barley, rice, millets, maize and fruit.

TURKEY

Position and Size.—The present-day republic of Turkey occupies a compact, roughly rectangular block of country, the whole of Asia Minor, in Asia and a few dozen square miles only of European territory between Stamboul (Constantinople) and the Maritza River. The whole area is about a third of a million square miles, and the population 13,650,000, of whom 12,450,000 are in the Asiatic portion. Modern Turkey is entirely different in character from the old Turkish Empire. The Empire included large numbers of Greeks, Syrians, Arabs, and other races differing in language, customs, and creed. The Sultan was not only supreme ruler of the Empire, but was also head of the Mahomedan religion. The modern Turkish republic, on the other hand, is essentially Turkish; the Greeks and other nationalities have been expelled and the country divorced from the Mahomedan religion; the Turks aim at building up a national state on modern European lines. Within a few years they have adopted European dress and the European alphabet (Roman) and abolished many of their oriental customs.

Physical Features.—The whole of Asiatic Turkey, that is, Asia Minor, consists of a plateau and its marginal lands. Bounded on the north by the Black Sea, on the north-west by the Sea of Marmara, on the west by the Ægean, on the south by the Mediterranean and the Mesopotamian lowlands, the boundaries are well defined except on the east, where they pass through the tangled mass of mountains known as the Armenian Knot. The surface of the plateau has an average elevation of about 2,500 feet; it has a slight tendency to slope towards the centre, where lies the large but shallow lake of Tüz Göl, and rises generally eastwards towards the Armenian Knot. On the north the plateau is bounded by the Pontic mountains, consisting of a succession of ranges with a general east to west trend separated by deep valleys. From the plateau towards the Black Sea one first climbs the innermost range and then descends by a series of deeply hollowed steps. The rivers of this region often have long courses parallel to the coast before breaking through one of the ranges. These ranges are often short, and none runs the whole length of the plateau. On the south the plateau is bounded by the Taurus, again consisting of a succession of short ranges, but less complex than the Pontic and sometimes dropping sheer to the Mediterranean. Eastwards the Taurus is reinforced by the Anti-Taurus, and the whole series trends towards the north, joining up with the Pontic ranges to form the Armenian Knot.

On the west there is no definite rim to the plateau. Instead, the "grain" of the country is east and west; big spurs from the

plateau project westwards and form mountainous promontories separated by deep, fertile valleys. These valleys are drained by

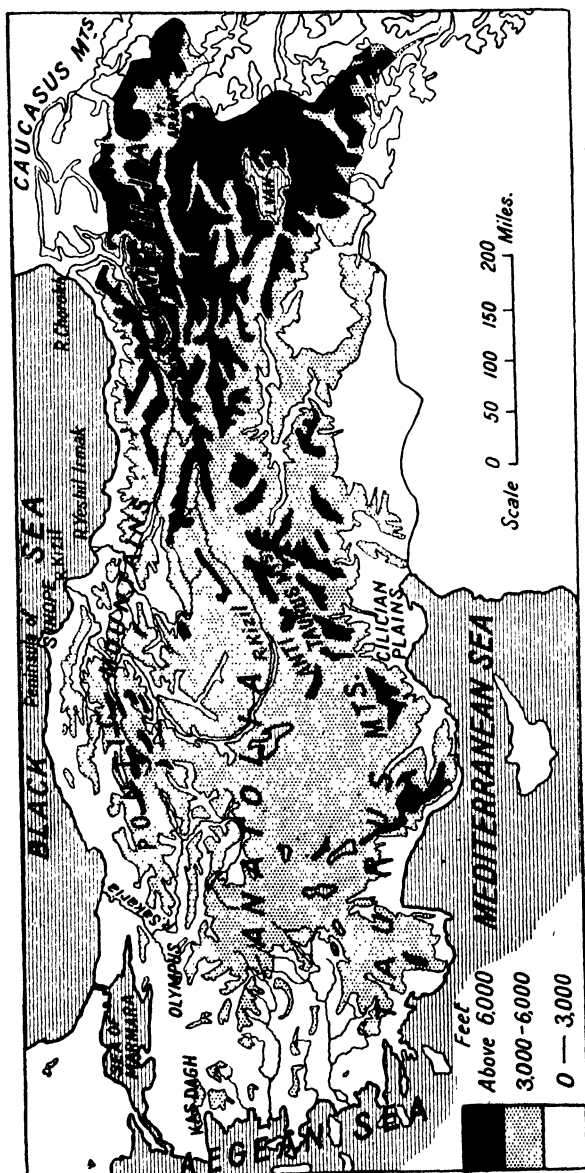


FIG 118.—Turkey in Asia: physical (from Stamp's Asia, by permission of Methuen & Co., Ltd.).

rivers which include the Caicus, Hermus, Cayster, and Meander, and they constitute some of the most important land in Turkey.

Climate.—Asia Minor comprises two climatic belts—the coastal tracts and the plateau. The *coastal tracts* have essentially a climate of the Eastern Mediterranean type. The greatest extremes are on the Cilician plains (50° in January to 84° in July); the *Ægean*

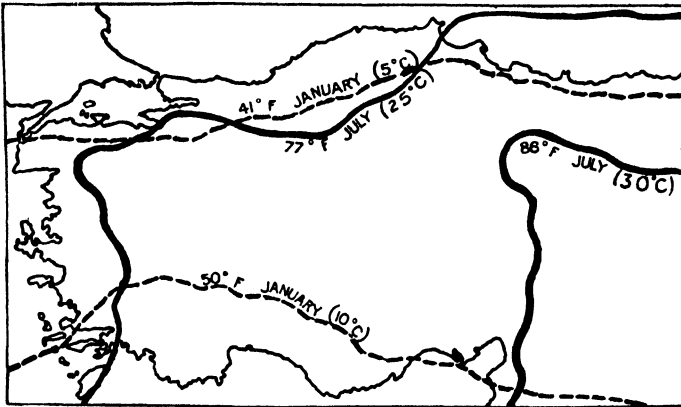


FIG. 119.—The climate of Turkey: January and July isotherms.

valleys are between 40° and 50° in January but generally below 75° in July; along the northern coast the January temperatures are about or below 40° . The winds which sometimes sweep down the Mediterranean valleys from the plateau in winter are bitterly

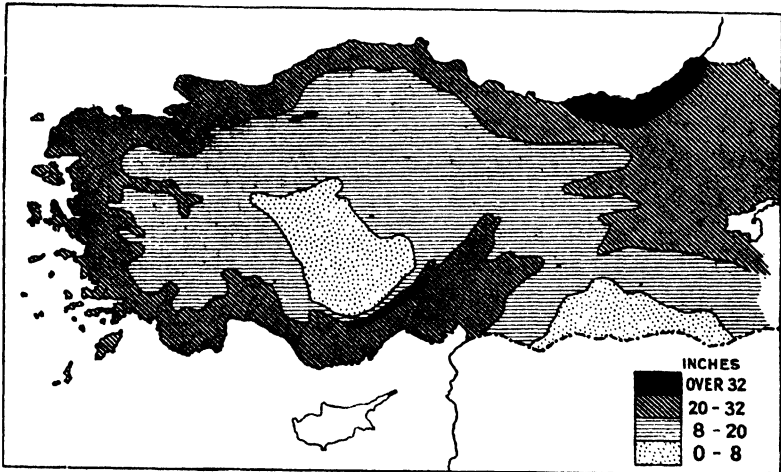


FIG. 120.—Asiatic Turkey: rainfall (after R. Fitzner).

cold, and may be compared with the mistral from the Alps. The rainfall of the south and west coasts, almost entirely in winter, is about 20 or 30 inches, but the north-east coast has a very heavy fall, the winds picking up moisture from the Black Sea.

The climate of the *plateau* is like that on the steppes of Russia, but with a winter rainfall. Bitter winds sweep across the level plains throughout the winter and late into spring, whilst the summers are scorchingly hot; over large areas where the rainfall does not exceed 10 inches semi-desert conditions prevail.

Vegetation.—The Mediterranean strips are clothed with the usual evergreen woodland, succeeded on the mountain slopes by deciduous and coniferous forest and by mountain pastures. Over vast areas the plateau is treeless except near watercourses, and the vegetation of grass and small shrubs is often very sparse.

Natural Regions.—In dividing Turkey into natural regions there is first the clear-cut division into plateau and coastal tracts, whilst the usually forested mountains constitute a third primary

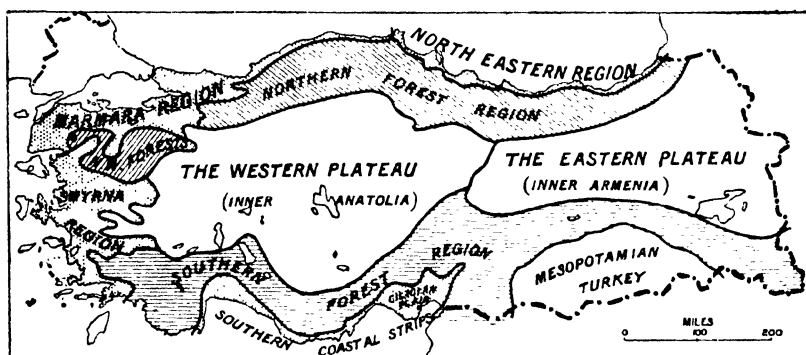


Fig. 121.—The natural regions of Turkey (from Stamp's *Asia*, by permission of Methuen & Co., Ltd.).

division. As shown in Fig. 121 these primary divisions may be subdivided.

(a) Coastal Areas.

1. *The North-Eastern Region*, as already explained, has a climate which is scarcely typically Mediterranean. The rainfall is heavy and there is no month wholly without rain. The olive tree—a tree so characteristic of Mediterranean lands as to be used as an “index” of Mediterranean conditions—will grow, but the olives yield little oil. The most important parts of this region are the alluvial plains at the mouths of the Halys, Yeshil, and other rivers, where tobacco is a leading crop. Samsun is the chief centre of tobacco culture in Turkey. Trebizond is the port of the eastern plateau.

2. *The Marmara Region* occupies the coastlands round the Sea of Marmara and includes broad, fertile valleys such as the Ismid Valley, Brusa Plains, and Plains of Troy. With this area may be considered the narrow coastal strips which border the western half

of the Black Sea. The valleys mentioned lie between lofty ridges which represent the western end of the Pontic mountains. The climate is Mediterranean, though the winters are cold and the January average only 40° or 41° . Tobacco is important and various Mediterranean crops are grown, but this is, *par excellence*, the olive-growing region of Turkey. Olive oil in Mediterranean lands takes the place occupied by butter in more temperate latitudes, and large quantities are required. Despite, therefore, a huge production, Turkey has no surplus for export. The principal town of the region under consideration is Brusa, connected by a short railway and motor road with the port of Mudania on the Sea of Marmara. Chanak, on the demilitarized zone along the Dardanelles, is also in

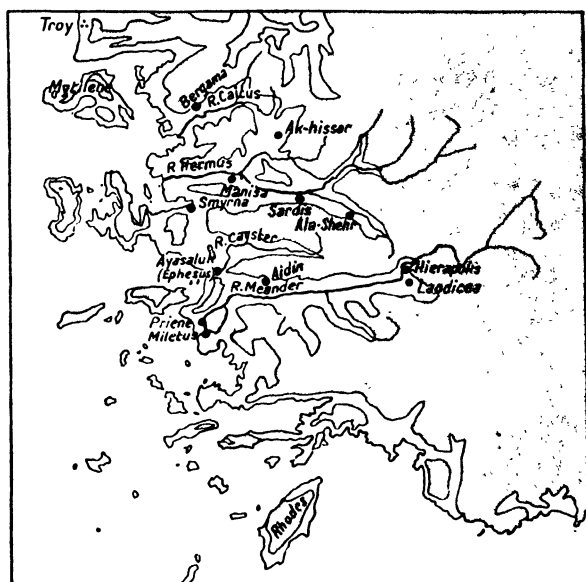


FIG. 122.—The west coast valleys of Turkey and the Smyrna hinterland (from Stamp's *Asia*, by permission of Methuen & Co., Ltd.).
(Land over 1,000 feet stippled.)

this region. Now that the bulk of Turkey is in Asia and the capital is at Angora, Stamboul as the chief port is on the wrong side of the Bosphorus, and the Turks plan to construct a large port on the Asiatic side. The naval station of Ismid is already here. Eregli (Heraclea) on the Black Sea coast is being made the port of Angora, and a railway between Eregli and Angora is under construction.

3. *The West Coast or Smyrna Region* consists of the important fertile valleys already mentioned and the intervening ridges. The numerous islands off the coast which form extensions of the ridges are now part of Greece. Broad arms of the sea occupy the

lower parts of the valleys and afford many sheltered harbours. The best of these, that of Smyrna, is situated near the head of an inlet into which no river brings sediment to cause silting up; on other inlets many of the ports of ancient times are now far inland. Though far from densely populated, the valleys of this region contain a large proportion of the total population of Turkey, and the region is famous for its output of dried fruits—especially the figs and sultanas exported from Smyrna. Another export crop is opium, whilst large areas are under wheat, barley, olives, and other crops for home consumption. The Mediterranean oak woodlands yield *valonia*, a name applied to the cups of the acorns of one of the oaks, from which a valued tanning material is obtained. Smyrna—a large part of which was destroyed by fire in 1922—is the great town and port of the region, and in addition to packing fruit for export, makes Turkey carpets. This part of Turkey was formerly much under Greek influence from ancient times, and there are many famous old towns, some of which now serve as collecting and distributing centres. Such are Bergama in the Caicus valley, Manisa in the Hermus valley and Aidin in the Meander valley.

4. *The South Coast Region.*—In many places along the Mediterranean the Taurus mountains rise almost sheer from the sea, and the coastal plain, if present at all, is but narrow. There is one area of some extent around Adalia, but by far the most important tract is that of the Cilician Plains. Here the climatic conditions are not unlike those of the Nile Delta—scorching hot in summer, mild and with only a low rainfall in winter. In this area cotton-growing is important, and there are modern cotton mills at Adana. The port of Adana is Mersina.

(b) *Plateau Areas.*

1. *The Western Plateau or Inner Anatolia.*—Economically the steppelands of Anatolia have less importance than the coastal regions just described, but they are the home of the Turkish race and form the heart of the modern republic. The whole region being one of low rainfall, generally less than 14 inches a year, it cannot be described as naturally very productive. As usually the case in a country where the rainy season and the hot season do *not* coincide, rock weathering and formation of soil are slow processes. As a result the soils on the plateau are shallow, stony, and poor and only in favoured tracts suitable for agriculture. Where the underlying rocks are impervious there are broad, unhealthy salt marshes. Elsewhere are numerous dry areas almost devoid of vegetation and sometimes covered with a white crust of alkaline salts which attract attention by their blinding glare in the summer sunshine. Stock-raising, carried on by nomads, is the chief occupa-

tion of the plateau. Cattle are reared where the somewhat richer pastures near a stream or lake provide fodder, and oxen are the principal animals used for ploughing in those regions where agriculture is possible. But the chief wealth of the region lies in sheep and goats. The sheep yield wool, mutton, and milk and form the chief source of meat for the whole country and of the wool used for clothing and for rug and carpet making. The goats are the long-haired Angora goats, producing the famous silky mohair. The hair is clipped off annually and exported *via* Constantinople, but the Turkish production has long been exceeded by that of South Africa. Mohair is largely used for the manufacture of hard-wearing materials such as plush. Amongst the favoured regions where agriculture is possible there is the Kaisarie district and the south-western portion of the plateau near Konia. The latter area grows large quantities of wheat, and in addition to existing irrigation works there is a big scheme in hand for the utilization of water supplies from the nearby mountains of the Taurus. Amongst the towns of the plateau, the most important, of course, is Angora, the present capital. The old town occupies an impregnable position on the top of a steep-sided hill, the new town being built round the foot. Its position with regard to the railway system of the country should be carefully noted. Other important centres on the plateau are Kaisarie, Eskishehr, Konia and Karman.

2. *The Eastern Plateau or Inner Armenia.*—This plateau is very much cut up by numerous ranges of hills and thus differs from the more open western plateau where hills, though by no means absent, are widely separated by stretches of plain. The climate of the eastern half of the plateau is extremely severe, parts of the area being known as the Siberia of Turkey. The principal centre is the town of Erzerum.

(c) *The Forest Areas.*

1. *The Northern Forest Region* corresponds broadly with the Pontic ranges, already noted as consisting of ridges of hills parallel to the Black Sea coast and deep intervening valleys. Oak is most important amongst the timbers, and although considerable quantities are extracted large areas of the forest are still untouched. There are some important coal-fields in this part which will be opened up by the new railway from Angora to Eregli.

2. *The North-Western Forest Region* is a comparatively small tract largely surrounded by agricultural land and from which there is a considerable export of valonia.

3. *The Southern Forest Region* corresponds roughly with the Taurus ranges, and it is economically the most important of the three areas. In the extreme west timber is extracted for ship-

building, and exported from Stamboul and Smyrna. The forests near the Cilician Plains furnish timber to the neighbouring lowlands. Further east this region includes the rich mining districts around Arghana and also the important town of Diarbekr. This part of Turkey, it may be noticed, includes a certain area belonging geographically to the Mesopotamian lowlands.

Communications.—Modern Turkey is a vast country and the only way of developing its resources is by improving communications, especially the railways, of which there are about 3,000 miles at present in operation. A map has therefore been included showing the existing railways and those under construction. This should be carefully studied with reference to the natural regions



Railways shown thus: — (in operation); - - - (under construction); (projected).

FIG. 123.—Existing and proposed railways in Turkey (after Stamp, *Modern Transport*, 1928).

and the tracts specially mentioned as capable of development. As already observed, however, Turkey is only thinly populated, and the population is not a rich one. The map of communications shows that the new capital of Angora is centrally situated and fairly accessible from all parts of the country, especially when the new ports shall have been opened. The leading port at present is, of course, Smyrna, if one excludes Stamboul in European Turkey, but from what has been said it is evident that Turkey intends to make Eregli, Samsun and Trebizond the great ports of the north, Adalia and Mersina the ports of the south.

Foreign Trade.—The exports of Turkey at the present time are valued at about £20,000,000, the three leading items being tobacco, fruit, and wool, including under the last the woollen carpets which one associates especially with the country. Amongst the imports cotton goods and metals take leading places, but 10 per cent. of the total consists of cereals, indicating a rather unsatisfactory state of affairs when such a large and predominantly agricultural country should need to import foodstuffs. It may be

explained that although only a small quantity is grown in the country, rice forms a staple food-grain of the Turks.

CYPRUS

The island of Cyprus was conceded by the Turks to Britain as long ago as 1878, but it has remained a comparatively little-known portion of the British Empire. It has an area of 3,584 square miles and a population of about one-third of a million consisting

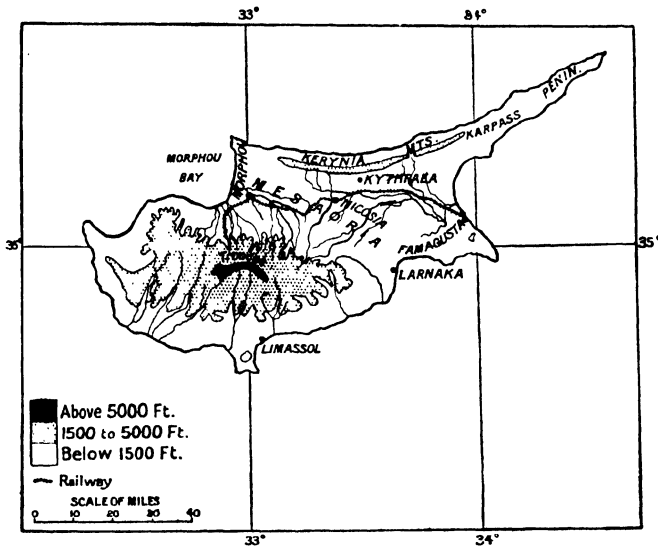


FIG. 124.—Cyprus.

mainly of Greek and Turkish descendants. The island can be divided into three physical units: the northern range of hills, the central stretch of plains, and the southern mass of mountains. The winter is cold, the summer scorchingly hot; the rainfall on the whole is low. Economically the most important part is the central plain which, owing to its sheltered position, is a very arid tract except where irrigated. In spring the whole of Cyprus is delightful, and the harvest of barley and wheat is early, whilst a rich profusion of fruits is produced later in the year. There is no doubt that Cyprus is capable of much greater development, that it has enormous importance from the point of view of its strategic position, and deserves to be better known. The principal towns are shown in the accompanying map.

ARAB ASIA

Introductory.—Over nearly the whole of South-Western Asia south of the mountain belt of Persia and Turkey, the Arab race and the Arabic language are predominant, and hence the convenience of the name "Arab Asia" to include the whole of this tract. It is now divided between the French mandated territory of Syria, the British mandated territory of Palestine and Transjordan, the kingdom of Iraq, the Arab kingdoms of Arabia proper, and the British sphere of influence extending from Aden.

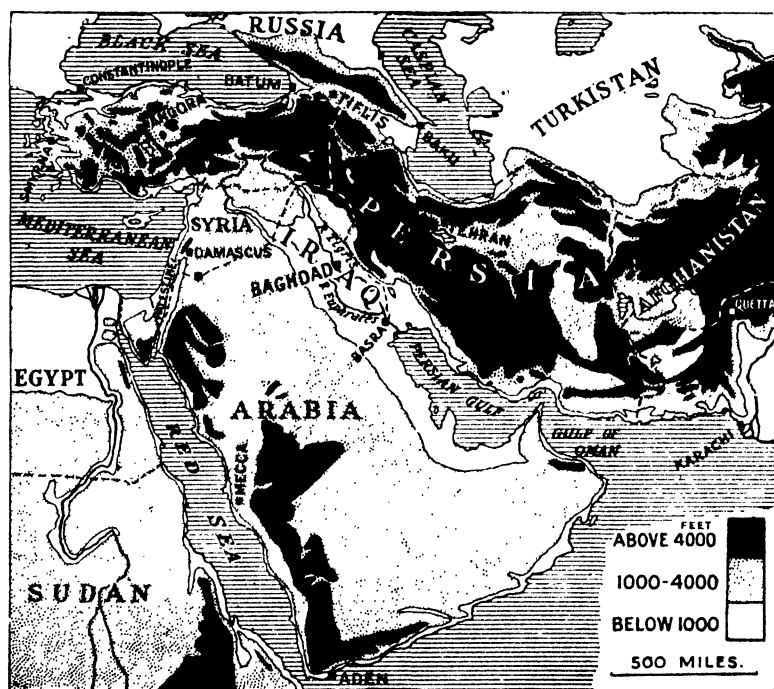


FIG. 125.—South-Western Asia.

Physical Features.—Well defined on the north by a mountainous rim, Arab Asia is demarcated on all other sides by the sea, except along the narrow isthmus of Suez which separates it from Africa. The dominant feature of the whole area is the great plateau of Arabia, with its high south-western edge overlooking the Red Sea and its long, gentle slope north-eastwards to the plains of Mesopotamia. In the east the plateau merges into the fold-mountain country of Oman, the ranges of which are connected with the Persian system on the other side of the Persian Gulf. In the west along the Mediterranean Sea are the north to south

mountain and valley systems of Syria and Palestine, including that famous trench, the Jordan Rift Valley. Geologically the whole area, with the exception of the fold ranges of Oman, consists of an ancient block of metamorphic rocks, and is thus comparable with the plateau of peninsular India. The ancient rocks, however, are hidden over large areas by later deposits, by great spreads of almost horizontal limestones in Palestine and Syria and by vast tracts of alluvium in Mesopotamia (compare the alluvium of the Ganges Plain). Along the high south-western edge of the plateau, and, indeed, over many other parts of the plateau, there are huge spreads of lava, much of which is of comparatively recent age.

Climate.—The Tropic of Cancer passes through the heart of Arabia and across the centre of the Red Sea, so that Arabia is essentially in the Extra-Tropical High Pressure Belt of the Sahara. In the extreme south the mountains are slightly influenced by the monsoons of the Indian Ocean; on the other hand, the parallel of 34° N., which passes through the centre of the eastern Mediterranean, passes slightly to the north of Beirut, Damascus, and Baghdad, so that this tract (*i.e.* Syria and northern Mesopotamia) lies in the continuation of the Mediterranean belt. The cyclones which bring the rainfall to Mediterranean lands give Syria and Palestine a characteristic winter rainfall and then work their way, with decreasing intensity it is true, along the lowlands of Syria south of the great belt of mountains, and so into the Mesopotamian plains. The rainfall from these cyclones gives rise to the famous “fertile crescent” connecting northern Syria and Mesopotamia. Reference will be made later to the great importance of this particular tract.

Vegetation.—The natural vegetation of most of South-Western Asia is the Evergreen Mediterranean Woodland, passing gradually into scrub and desert as the rainfall decreases. As will be described in detail under Palestine, elevation results in great differences in natural vegetation and cultivated crops. Arabia is often popularly regarded as if it were one vast desert. Actually it consists of what may be called, for want of a better name, dry steppelands (though they are not necessarily dry grasslands), surrounded by a ring of true desert country. Amongst the arid steppelands are numerous large and important oases capable of supporting a large settled population.

Population.—The Arabs are the natives of Arabia and are organized in small tribes ruled by a chief sheik. They fall readily into two classes, settled tribes and the nomadic tribes who are otherwise known as Bedouins. On the borders of the tract under consideration, that is to say in Palestine, Syria, and Mesopotamia, the Arabs have come very markedly under the influence of surrounding nations. The main lines of communica-

tion in the past between Europe or Africa and Central and Eastern Asia have passed through South-Western Asia, so that the population bears the impression of contact with such varied nations as the Egyptians, Greeks, Romans, Turks, French, and British. The settled population of these borders, therefore, though largely of Arab stock, is more conveniently called Syrian. The Jews of Palestine will be considered later.

Communications.—Before leaving Arab Asia as a whole reference must be made to the importance of the area from the point of view of international communications. If we exclude the northern routes through Russia, the possible lines of communication between Europe or Egypt and India or the Far East which were available to the ancients are not numerous. The passage

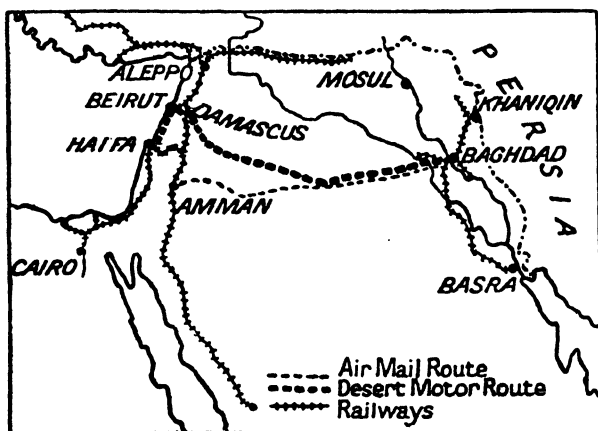


FIG. 126.—The desert routes of South-Western Asia (from Stamp's *Asia*, by permission of Methuen & Co., Ltd.).

through the complex of mountains of Armenia was extremely difficult, leaving two groups of routes :

(a) *The Red Sea Routes.*—The ancients utilized these routes by going up the Nile Valley to Thebes, crossing the desert to a port on the Red Sea, and thence by sea to India. The present-day route has been developed into the Suez Canal route which, it will be noticed, is controlled by the nation which commands Suez on the one hand (Egypt) and the nation commanding the entrance to the Red Sea on the other. Here Great Britain holds Perim Island in the Straits of Bab-el-Mandeb (and also the Aden coast), France the opposite coast of Africa (French Somaliland).

(b) *The Persian Gulf Routes.*—Because of the mountains on the north and the desert on the south these routes from the Mediterranean to the Persian Gulf had of necessity to pass along that fertile tract to which we have already referred, known as the

Syrian saddle or the fertile crescent. In recent times the bold bid of Germany to gain control of this ancient route by building the Baghdad railway emphasizes the controlling influence which geography may still exercise. The actual Baghdad railway, it should be noticed, starts from Konia on the Anatolian plateau, and threads its way by a series of tunnels through the Taurus range near the famous pass known as the Cilician Gates, to the Syrian town of Aleppo. From Aleppo it reaches as far as Nisibin, about 150 miles from the Mesopotamian railhead. Of very special interest in connection with land routes is the modern motor road across the desert between Beirut and Damascus in Syria and Baghdad in Mesopotamia. From Damascus to Baghdad is 513 miles right across the desert, but with modern motor coaches, specially constructed, the journey can be performed in less than 24 hours, a speed of over 40 miles an hour in some stretches being regularly maintained by the motors of the mail service. Comparing this with the average rate of bullock-cart travel in India or the Far East, which is 15 miles per day, it would take 30 days of continuous travel to cover the equivalent distance, obviously impossible across such desert country.

PALESTINE

Position and Area.—The British mandated territory of Palestine has an area of about 9,000 square miles—rather larger than Wales—and a population of under a million. The present boundaries of the country correspond closely with the historic boundaries of the promised land of the Jews, and were so framed after the capture of the country from the Turks in 1917–18 as to include all the new Jewish colonies. On the other or eastern side of the Jordan the mandated territory of Transjordan is under the same administration, but is not part of the territory set aside as a national home for the Jews.

Physical Features and Climate.—Palestine consists of three parallel strips :

(i) *The Coastal Plain* which lies along the Mediterranean and is broad in the south but narrows northwards where Mount Carmel almost reaches the coast. The climate is typically Mediterranean with a comparatively small range of temperature, frost and snow being unknown in winter and the average August temperatures not exceeding about 80°. The rainfall increases steadily from south to north. Climatically favoured, the maritime plain has also a light, fertile soil, and the whole area is proverbially fertile. Much, however, is uncultivated at present, and there are large areas available for Jewish settlement. Around Jaffa are the famous orange groves ; further

north are cornfields and vegetable gardens. Bananas also grow well in this region.

(ii) *The Hill Country*, also called West Jordan Land, forms a strip lying between the coastal plain on the west and the Jordan Rift Valley on the east, and about 25 to 40 miles in

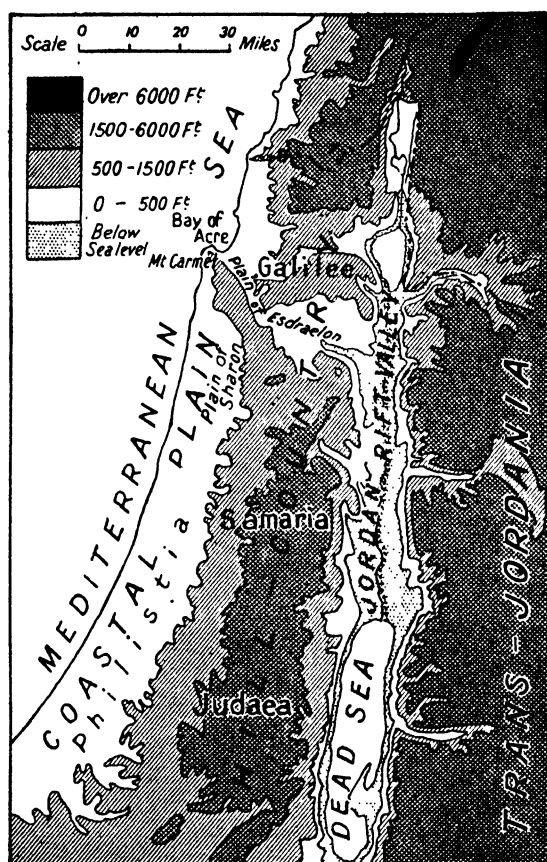


FIG. 127.—Palestine : natural regions.

width. It is divided into two separate blocks by the broad, fertile plain of Esdraelon, the block to the north known as Galilee, the high block to the south including Samaria and Judæa. The whole country is built up of a succession of hard impervious limestones and softer chalky limestones, the beds being approximately horizontal. Where the hard limestone prevails the hills are barren and stony, the innumerable valleys narrow and dry, whereas the chalky limestones give rise to more fertile country ; the very best country, however, is that

in the north, where the rainfall is heavier and where lava flows have disintegrated to a rich soil. The climate is more severe than that of the coastal strip, January average temperatures being as low as 45° , frost being usual and snow not uncommon. The natural vegetation is a rough scrub, whilst amongst cultivated plants olive groves are especially important in Samaria and corn crops in Galilee, but very large areas are uncultivated and tenanted only by a few sheep or goats. This is especially the case in the south, where the rainfall is very low. Jerusalem lies in the heart of the whole belt of Judæa about 3,000 feet above sea-level, whilst Nazareth occupies an almost corresponding position in Galilee.

(iii) *The Jordan Rift Valley* is a long, straight valley with very steep, almost precipitous sides and averaging 10 to 15 miles in width. It is drained by the Jordan, which rises in the north, flows through the Sea of Galilee, and then for 70 miles pursues its course before emptying into the Dead Sea, the surface of which is 1,292 feet below sea-level. As on the coastal belt, temperatures are much higher but are here more extreme; Jericho, for example, ranges from 54° in January to 89° in August. Frost and snow are entirely unknown. Much of the Jordan Valley is sheltered from rain-bearing winds and forms a very dry, almost desert tract. Considerable areas can be (and probably will be in the near future) irrigated from the Jordan, though in the south the soil is too impregnated with salt. Where the rain-bearing winds from the Mediterranean can penetrate, as they do south of and around the Sea of Galilee, the tract is a fertile agricultural one. The crops possible are those mentioned in connection with the coastal plain, and therefore contrast with those of the hill belt, where such warmth-loving plants as bananas will not grow.

Population.—The population of Palestine consists very broadly of two-thirds Syrian Moslems, one-sixth Christians, mainly Syrians,

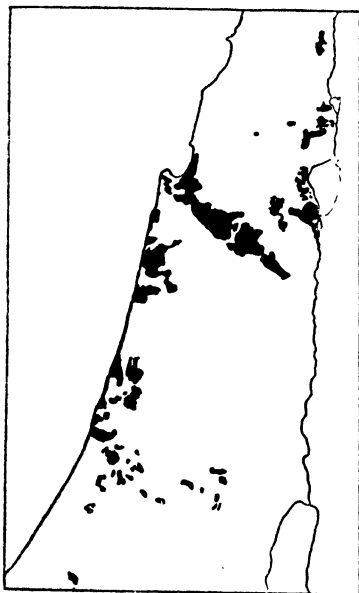


FIG. 128.—Jewish land in Palestine (from Stamp's *Asia*, by permission of Methuen & Co., Ltd.).

(Notice its concentration in the Plain of Esdraelon and along the coastal strip.)

and one-sixth Jews. The almost insoluble problems of the country are bound up with the racial and religious differences of this population. Palestine is the promised land and the ancestral home of the Jews. It is also the birthplace of Christianity and contains the spots most sacred to Christians; but Jerusalem, after Mecca, is the holiest of Mahomedan cities, and was in Moslem hands continuously for seven centuries until 1917. Fortunately, the

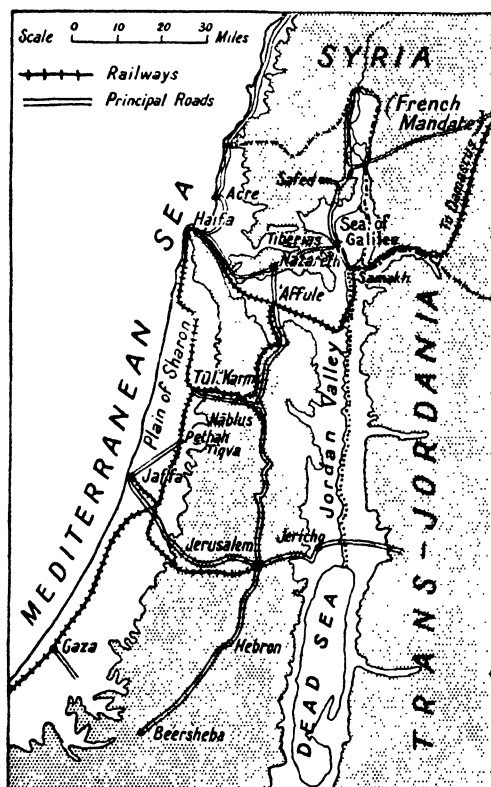


FIG. 129.—Palestine: communications by rail and road.

Tel-Aviv adjoining Jaffa is a monument to Jewish enterprise; a thriving city now stands where a few years ago was a waste of sand dunes.

Communications and Trade.—Palestine has a good system of metalled roads which are the natural descendants of tracks made in those days when the hill roads were safer than the valleys, and hence the existing roads are badly placed from the point of view of modern transport. To give an example of this: from the principal port of Jaffa to the plateau of Transjordan is about

the country is far from overpopulated, and it is estimated that one-third of the whole area is available for purchase and settlement. Hence making Palestine the national home of the Jews does not require evacuation by any existing inhabitants. There are over 100 Jewish agricultural settlements in Palestine, the immigrants coming mainly from the countries of eastern Europe. It is only fair to state that these Jewish cultivators have been very active and have in particular drained and rendered fertile the once malarial and unhealthy stretch of the Plain of Esdraelon. In addition the considerable town of

75 miles, but the road climbs 3,000 feet to Jerusalem, then drops 4,300 feet to the Jordan, and then climbs again 4,000 feet to Amman. A road from the port of Haifa would avoid all hills except the final one. There is little doubt that in the future Haifa, the natural outlet of the whole country and already an important railway junction, will become the chief port and probably the chief manufacturing town; extensive harbour works are already in progress. This development of Haifa will be hastened if the oil pipe line from Mesopotamia is made to terminate there.

The exports of Palestine in recent years have been worth about £1,500,000. By far the most important exports are oranges; other items include soap made from olive oil, water melons, wine, and almonds. It should be noted that the imports, which include numerous food-stuffs, are about five times as valuable as the exports. This is despite the fact that Palestine is predominantly agricultural and can grow much larger quantities of wheat and barley and millets than it at present produces. Palestine is poor in minerals, but it is possible that the Dead Sea salts will one day be utilized.

Transjordan occupies a considerable tract of the plateau on the east side of the Jordan Rift Valley, and is an agricultural and pastoral land merging into desert.

SYRIA

Position and Area.—The country now officially known as Syria is under French mandate, and lies between Turkey on the north, Palestine on the south, and between the Mediterranean Sea on the west and the Syrian desert on the east. It has a total area of about 60,000 square miles and a population of about 2,000,000, three-quarters of whom are Mohammedans.

Physical Features.—The same four belts as in Palestine and Transjordan may be distinguished, but they are not so clearly marked.

i. *The Coastal Plains*, which are narrower and in many areas can scarcely be separated. Where the narrow coastal plain locally broadens out one usually finds a town of some importance. Examples are Alexandretta, Tripoli, and Beirut. Like the Palestinian plains those of Syria (including Phœnicia) are fertile and valuable. Tripoli has world-famous orange groves, Beirut huge olive groves, whilst the plain of Latakia is famed for tobacco.

ii. *The Western Hill Belt* consists in Syria of a succession of mountain or hill ranges divided into three blocks by the gorges of the lower Orontes and the Homs-Tripoli Pass. The northern block is known as the Amanus Range, the central as the Ansariyeh Mountains, and the southern as the famous Lebanon. Much of the hill country is wild, and inhabited by Mohammedans famed for

their religious and general intolerance and who form almost independent political units. Here the mountains are of limestone and the inhabitants live mainly in villages in the valleys. Few trees now remain to remind one of the once famous cedars of Lebanon, except where they have been preserved in sacred groves.

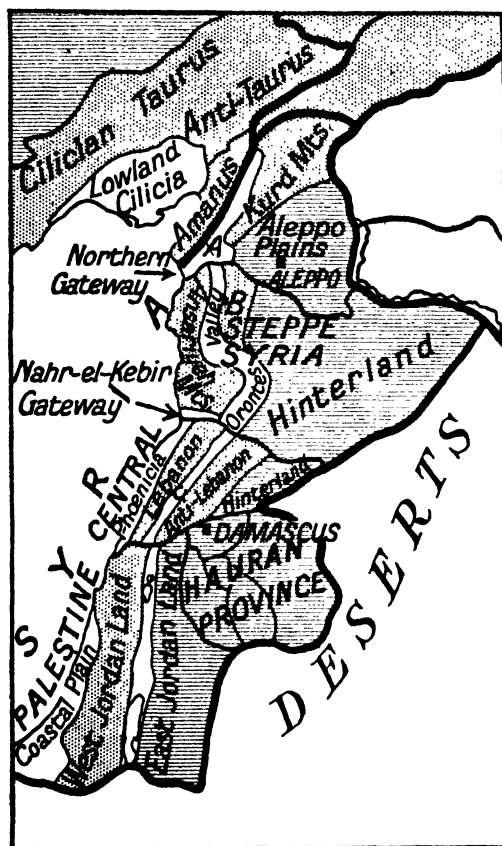


FIG. 130.—Syria: natural regions according to Banse.

iii. *The Great Central Depression* corresponding to the Jordan Valley is not nearly so well marked as in Palestine, nor does it sink below sea-level. In the north it is formed by the fertile plain of Antioch (marked A on Fig. 130), where mulberry trees are cultivated and the production of silk is important, and various cereal crops are grown. An interesting product of this region is liquorice root, found growing wild near marshes and river banks. Further south the depression is occupied by the middle course of the Orontes and is a marshy and unhealthy tract. The upper course of the Orontes (marked C

on Fig. 130), on the other hand, lies in a delightful, fertile valley about 10 miles wide, where are the prosperous little towns of Homs and Hama, and where there is a wide spread of cultivated fields and fruit trees.

iv. *The Eastern Mountain Ranges* do not form a continuous series; sometimes they are merely the edge of the eastern plateau (the eastern plateau is called "hinterland" on Fig. 130), but at other times rise to great heights, as they do in the range known as Anti-Lebanon and Mount Hermon. Another group of mountains is marked B on Fig. 130. Where the range is low, moisture-

bearing winds from the Mediterranean penetrate to the plateau, hence the cultivated fields and the broad tracts of grazing land in the north around Aleppo and in the south (Hauran Province of Fig. 130) near the borders of Transjordania. Where, on the other hand, the mountains are high, they effectively cut off the rain-bearing winds and the desert stretches right up to their lower slopes. This is the case near the famous city of Damascus, whose fertility is due to irrigation from the Barada River. Sooner or later, however, the eastern plateau passes into the Syrian desert.

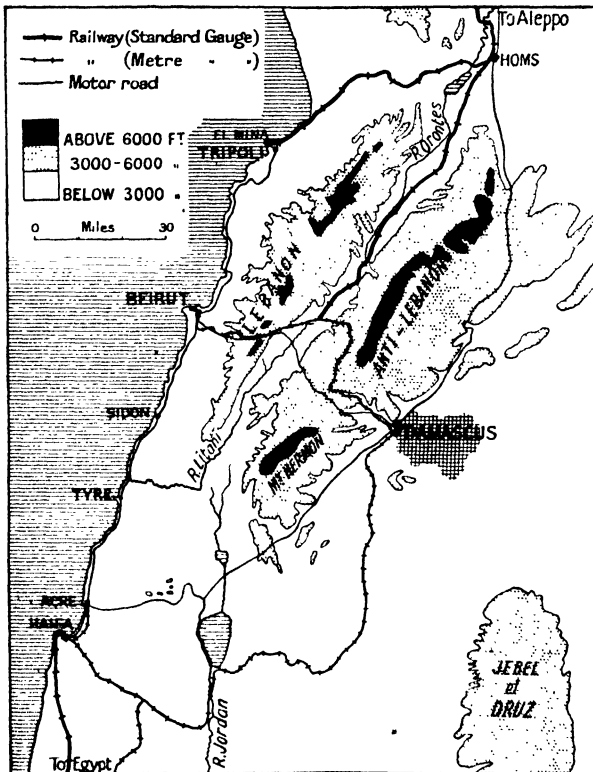


FIG. 131.—The position of Damascus.
(The cross-hatched area is the irrigated land.)

Communications and Development.—The railway system of Syria suffers from a mixture of gauges. There is a broad-gauge railway from Aleppo to the port of Tripoli, but that from Damascus to Beirut is only narrow gauge (Fig. 131), with the result that road transport is now important. The great towns of the interior are Aleppo, the wonderful market centre in the north and the starting point for the Syrian saddle routes to Mesopotamia, and Damascus in the south. Beirut is the great port, with lesser rivals in Tripoli

and Alexandretta. Syria is essentially an agricultural country. Wheat, barley, maize, and olives are the leading crops, whilst in recent years cotton cultivation has been widely extended, and the silk-rearing industry is an old and important one. Sheep and goats are also numerous. Syria is, however, poor in minerals. As in Palestine, there is an unfavourable balance of trade; cotton, wool, silk, and fruits are the chief exports, but it is important to notice that there is still a considerable import of cereals.

ARABIA

Position and Size.—Arabia proper is a great peninsula with an average breadth of 700 miles and a length of 1,200 miles, having thus a total area of about a million square miles, or considerably greater than that of the Indian Peninsula. It is interesting to note that the Arabs refer to their home as the “Isle of the Arabs,” thus emphasizing the geographical isolation of the peninsula, bounded by the sea on three sides and the desert on the fourth.

Physical Features and Climate.—The general nature of the plateau has already been described. The high south-western edge is rendered higher than would otherwise be the case by the accumulations of volcanic lava. Over a large part of the plateau the ancient crystalline rocks come to the surface, but towards the north they are obscured by sandstones and limestones of much later date. There are no perennial rivers in Arabia, their place being taken by countless river valleys (*wādis*) which carry water after rainstorms. Naturally the high south-western edge of the plateau is the main water-parting. The *wādis* which descend from this ridge to the Red Sea have deeply eroded beds, and are useless for navigation or irrigation and merely form an effective obstacle to communication from north to south. On the other hand, the *wādis* which descend towards the Persian Gulf are long and shallow, and though they do not carry surface water, water is at all times present at a small distance below their beds, and gives rise to strings of oases. Climatically, practically the whole of Arabia is characterized by dryness, and large areas are truly rainless. The mountains of the south-west, however, derive rain from heavy storms during the period of the Indian summer monsoon, whilst northern Arabia gets slight winter and spring rains from the Mediterranean. The intense heat of Arabia in summer is well-known, but it must be mentioned that in winter snow usually appears on the higher mountains and occasionally even on the surface of the plateau in the north.

The surface of Arabia may be divided into (1) true deserts, (2) dry steppes or steppe deserts, and (3) oases of cultivated land. The true deserts where vegetation is absent may be formed of hard gravel plain, continuous tracts of sand, by belts of soft sand dunes

(rare), or by harrah, the name given to tracts of rough lava, the surface of which cuts the feet of men and animals to pieces. Fig. 132 shows the areas occupied by true desert in Arabia. The huge area in the south, the name of which means "the abode of emptiness," should be especially noted. The dry steppes are vast tracts with a hard or dusty surface, with occasional natural water-holes and permanent though coarse vegetation in the hollows which supplies sufficient fodder for the camels and horses of the

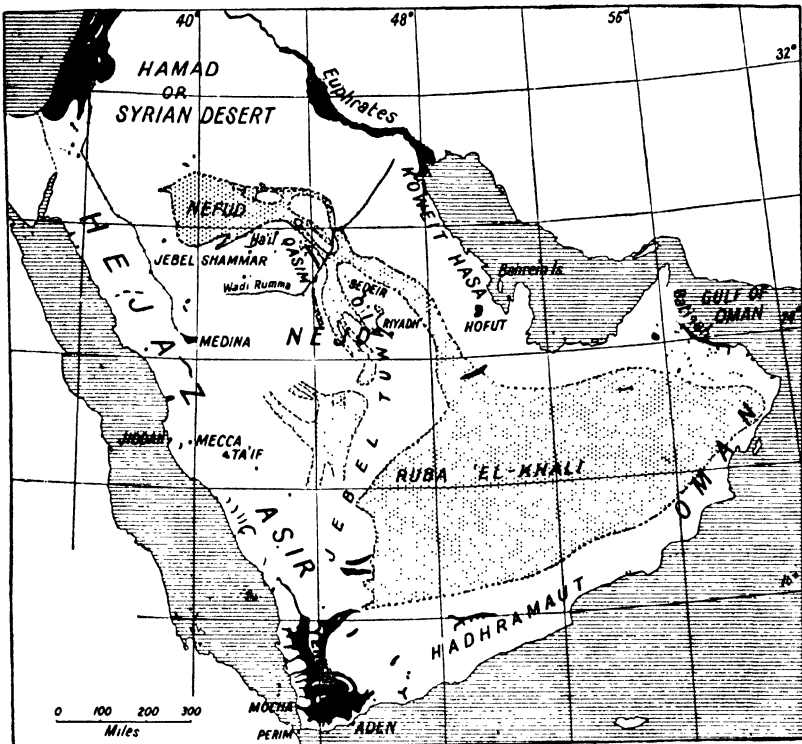


FIG. 132.—General map of Arabia (from Stamp's *Asia*, by permission of Methuen & Co., Ltd.).

(In black, cultivated land; dotted, deserts; black, steppes and steppe-deserts.)

nomadic tribes. The oases of cultivated lands in Arabia, marked black on the accompanying map, occur in two tracts, (a) in the heart of Arabia surrounded by a ring of deserts, and (b) along the coasts or margins. The most important of these tracts in the centre is known as Nejd, and there are at least sixty or seventy settlements of considerable size and which probably support a total population of between 500,000 and 1,000,000. Of the outer ring of fertile tracts the most important is that in the south-east, the Yemen, famed as the home of the celebrated Mocha coffee. The

excellence of this coffee grown on the hill slopes is said to be largely due to the rising mists which protects the trees from the heat of the day. The population of this area is probably about a million and a half. Further north are other small tracts ; that of Ta'if is important because it supplies much of the food required by the sacred city of Mecca. Other cultivated regions should be carefully noted on the map.

Population.—The population of Arabia is roughly estimated at between 5 and 7 million and includes about a million nomads. The interest of the country, however, lies in the fact that Arabia has influenced the course of world history out of all proportion to the number of its peoples. So long as the supply of water lasts and the crops grown afford sufficient sustenance, the population of the central oases remains hidden and cut off from the outside world, but faced with the results of the shortage of rainfall or of a succession of bad seasons, two alternatives are open to the inhabitants : starvation or emigration. The waves of population which have appeared suddenly on the borders of Arabia have been propelled in this way : the Canaanites who overran Syria, the Hyksos who overran Egypt, the Hebrews who invaded Palestine, all came from the heart of Arabia. So did the Arabs in more recent times settle over practically the whole of northern Africa. Before leaving the population of Arabia, mention must be made of the famous Moslem city of Mecca and the annual pilgrimage thereto. It is estimated that between 100,000 and 500,000 pilgrims travel to Mecca every year, reaching the sacred city in one of four ways, from Damascus by railway to Maan and thence to Medina and Mecca ; from Cairo across Sinai ; from Baghdad through the heart of the peninsula *via* the oases ; or, most important of all, by the port of Jiddah (Jedda).

Aden is a volcanic peninsula on the south coast of Arabia, about 100 miles east of the entrance to the Red Sea, under the administration of the Government of Bombay. It is, of course, a fortified coaling station on the British route to India.

IRAQ

Position and Size.—Iraq was freed from the dominance of Turkey during the Great War and became an independent Arab kingdom under Great Britain as the mandatory power. Iraq includes the land between the rivers Tigris and Euphrates, to which the name Mesopotamia should properly be restricted, a considerable tract of country between the Tigris and the mountainous Persian border, and a large area of desert south and west of the Euphrates. The whole has an area of about 143,000 square miles, considerably larger than the British Isles, and a population of roughly 3,000,000.

Physical Features and Climate.—Iraq may be described as consisting of four divisions.

- i. The Mountains of the North-East ;
- ii. Upper Iraq ;
- iii. Lower Iraq ; and
- iv. The Desert Fringe.

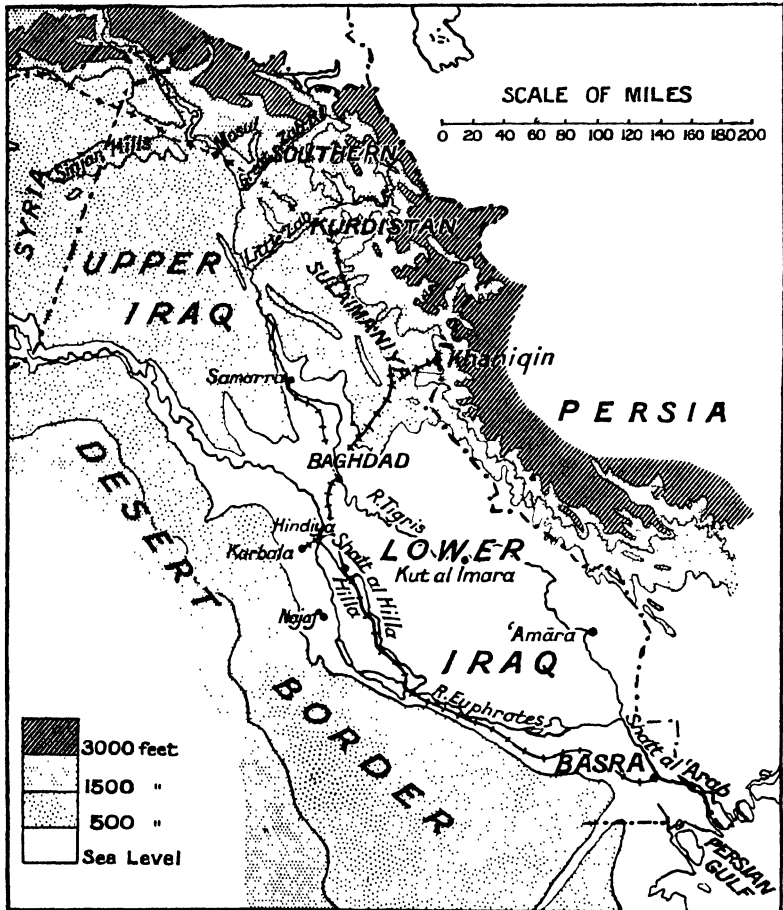


FIG. 133.—General map of Iraq.

The Mountains of the North-East, corresponding roughly with Kurdistan, form a wild and inaccessible tangle. The successive ranges decrease in elevation towards the plains, and there is good pasturage and cultivable land on the lower slopes and in the valleys.

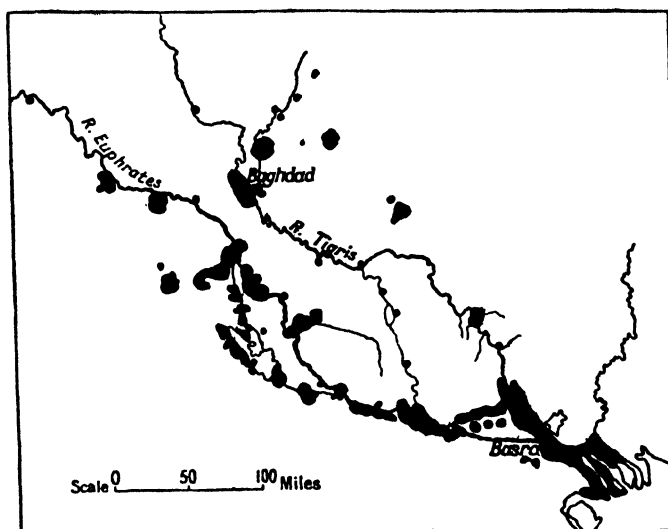


FIG. 134.—Date cultivation in Iraq (after Dowson).

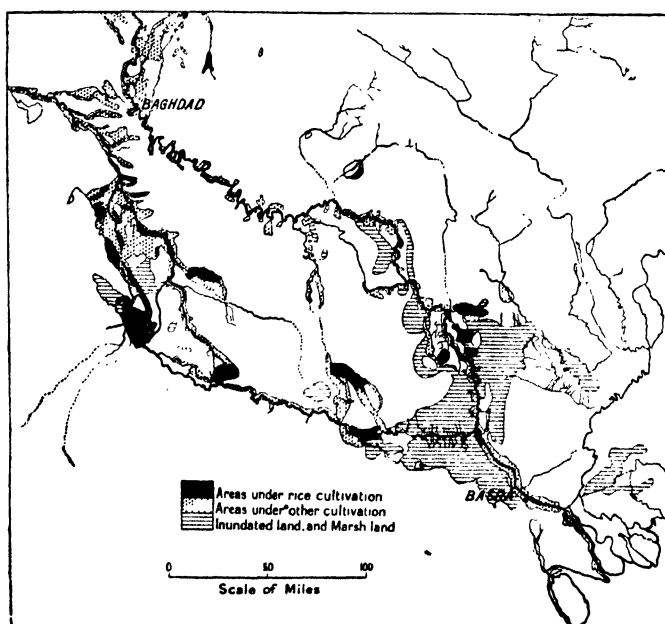


FIG. 135.—The cultivated land of lower Iraq.

Upper Iraq corresponds roughly with the Assyria of old and embraces a large portion of Mesopotamia, that is, the land between the rivers, as well as the country between the Tigris and the foothills of Kurdistan. It consists chiefly of open, undulating, treeless plainland, sometimes with low hills and for the most part arid and with a saline or alkaline soil. Cultivation is largely limited to the deep, broad river valleys where wheat and barley are the chief crops, both of excellent quality, and large quantities of tobacco are grown.

Lower Iraq stretches from a little above Baghdad to the Persian Gulf. The whole area is level, sloping very gradually to the sea; the soil is a fertile alluvium, still being added to by the overflow of the two rivers. In the days of the Babylonian Empire this appears to have been a land of amazing fertility with the flood waters of the rivers carefully controlled by inundation canals. Now much of the land lies waste, there are huge swamps which form breeding grounds for malarial mosquitoes, and the tract as a whole

EXPORTS 1925-26 & 1926-27									
FOOD				RAW MATERIALS					
DATES		GRAIN & C.	SUGAR	RAW WOOL	HIDES & SKINS	INTESTINES	METALS & ORES	ANIMALS	MANS.
								COTTON GOODS	VEHICLES
									VARIOUS
IMPORTS 1925-26 & 1926-27									
COTTON GOODS	SILKS	SUGAR	GRAIN & C.	TEA	WOOD	VARIOUS			
MANS.			FOOD						

FIG. 136.—Foreign trade of Iraq.

awaits a comprehensive scheme of irrigation and development. Rice is the great crop along the river valleys, but very special importance attaches to the cultivation of dates, and Iraq has been estimated to produce four-fifths of the world's dates. The dates themselves are the staple food of the Arabs, utilized in a great variety of ways: syrup and vinegar are made from old dates, as well as a strong spirit, the terminal bud of the date palm is eaten as a vegetable, the leaves of the palm are used for matting and thatching houses, the fibre of the outer trunk for rope, and the timber for building. Another crop of Lower Iraq which might be more extended is cotton, since the climate, closely resembling that of Egypt, which is characterized by great extremes, is suitable for the cultivation of the finer types of Egyptian cotton.

The Desert Fringe is unimportant, being inhabited mainly by semi-nomadic Arabs who rear camels, horses, and other animals.

Communications and Trade.—The Tigris and the Euphrates are the life-blood of the country, being to Iraq much what the Nile

is to Egypt. The Tigris is the principal navigable highway, the Euphrates being too slow and its course too tortuous and impeded by sandbanks to be of much value for navigation. The railway system of the country centres on the port of Basra and is a metre-gauge system. Basra is in direct communication with Baghdad, but not with Mosul, the principal city of Upper Iraq. From Baghdad the railway goes to Khanaqin on the Persian border, which affords an important means of entry into that country.

The total foreign trade of Iraq is valued at between 15 and 20 million pounds sterling, of which more than a quarter is represented by transit trade, largely trade with Persia. The exports are shown in Fig. 136, which emphasizes the paramount importance of dates.

THE IRANIAN PLATEAU

Lying between the Armenian Knot on the west and the great Pamir Knot on the east, there stretches a broad plateau occupied by Persia, Afghanistan, and Baluchistan. Baluchistan we have already considered under India, and in this section the remaining portions lying in Persia and Afghanistan will be dealt with. The high northern rim of the plateau is formed by the Elburz Mountains overlooking the Caspian Sea. These pass eastwards into a succession of ranges and then into the main chain of the Hindu Kush, the whole overlooking the plains of Russian Turkistan. The southern rim of the plateau consists of several parallel ranges which in the east are usually referred to as the Zagros system, and which overlook to the south the plains of Mesopotamia, the Persian Gulf, the Gulf of Oman, and the plains of the Indus. Although situated mainly on the plateau, both Persia and Afghanistan embrace also the mountain rims and strips of the adjoining lowlands.

PERSIA

Position and Size.—Persia is a kingdom with an area of nearly two-thirds of a million square miles. It is about 1,400 miles from north-west to south-east and 875 miles from north to south, yet the population of the whole is only about 10,000,000. Latitude 34° N. passes through the heart of Persia, so that the country is in the same latitudes as the eastern Mediterranean.

Physical Features.—The great plateau which forms the heart of Persia has an elevation of from 3,000 to 5,000 feet, and, except where it merges into the plateau of Afghanistan, is surrounded on all sides by complex walls of mountains, and, except in Eastern Persia where great desert plains are predominant, the surface of the plateau itself is cut up by hill ranges. This is a fortunate

circumstance, since sufficient snow accumulates on the mountains to provide water for the small valley settlements. Along the southern borders of Persia the mountains usually approach close to the sea and the coastal strip is narrow, dry, and barren; but in the south-west Persia includes a small but important tract (Khuzistan) of the lowlands adjoining Mesopotamia. On the north there is a narrow strip of plain along the shores of the Caspian, a small area, but important because of its rich soil and abundant rainfall. Most of the plateau is a region of inland drainage.

Climate.—The climate of the interior of Persia has been taken as a standard for the Iranian type of climate, that is, a climate of interior basins at considerable elevations in warm temperate latitudes. In winter the cold is intense, the mean January temperature being slightly above freezing, but the summers are characterized by cloudless skies, dry air, and scorching heat. The rainfall rarely exceeds 12 or 13 inches, and falls almost entirely in winter, being derived from the cyclones from the Mediterranean. The climate of Persia, therefore, may really be described as a variety of the Mediterranean type.

Population and Development.—Above all, Persia needs a larger population for development, for out of the total of 10,000,000 probably 3,000,000 are members of nomadic tribes. The position of practically all settlements on the plateau is determined by the availability of water from mountain streams, and hence the villages occur in lines following the dominant trend of the mountain chains. The chief towns are Tehran (210,000), Tabriz, and Isfahan.

Broadly speaking, agriculture is the mainstay of Persian life, but except along the Caspian it depends entirely on irrigation. The characteristic type of irrigation is that by means of karez, already described under India. Wheat, barley, and millets are the leading crops, with rice along the Caspian border. The production of rice in this tract is sufficient to supply the needs of the whole country. Opium is another important crop and so is cotton. The climate, like that of the Mediterranean, is well suited for the growth of fruits and the vine. Amongst animals, sheep and goats are important on the dry hill pastures rather than cattle, and there is a considerable export of wool as well as a large home consumption. The other animals are kept mainly for transport purposes. The production of silk in Persia is not as important as formerly, but the fishing industry in the Persian Gulf, one of the products of which is caviare, is increasing in importance.

The natural vegetation of most of the dry plateau is a scrub of thorny bushes. Several gums, notably gum arabic and gum tragacanth, are obtained from these thorny bushes. The only forests important for timber purposes are those on the slopes of the Elburz.

Geologically Persia consists of a central core of old rocks flanked by highly folded Tertiary or Cretaceous sediments. Coal and iron occur in the north-west, but the only mineral which has been developed is oil. The enormous expansion of the Persian oil production in recent years is one of the great romances of modern times, and the production is almost entirely in the hands of the Anglo-Persian Oil Company. The principal field is at Maidan-i-Naphtun, which was discovered in 1908. In 1913 the production of the Anglo-Persian Oil Company was 81,000 tons. Ten years



FIG. 137.—Persia : main trade routes.

later, by conservative development, it had reached 3,000,000 tons, and five years later this figure was approximately doubled. The Company pays royalties which constitute 15 to 20 per cent. of the total revenue of the Persian Government. It employs more than 25,000 persons, it has built roads, railways, schools, hospitals, and whole towns in a part of the country formerly almost uninhabited. A pipe line 145 miles long connects the oil-field with the refinery on the island of Abadan in the Persian Gulf. Other oil-bearing areas are believed to occur in Northern Persia, whilst the southern belt extends westwards into Iraq, where there is likely to be a very important development in the near future.

The principal indigenous industry of Persia is the manufacture of carpets. The industry is still a village one and the various craftsmen transfer their knowledge to apprentices from one genera-

tion to the next. Although the industry has suffered from competition, carpets still form Persia's leading export, apart from oil, and in recent years they have been exported to the value of between £2,000,000 and £2,500,000. In addition to carpets, woollen felts, woollen shawls, and silks are made.

Communications.—At the present time Persia really has no railways of importance, but a main north to south line has recently been commenced. Fortunately the nature of the country is such that motor lorries and motor cars can use many of the old caravan

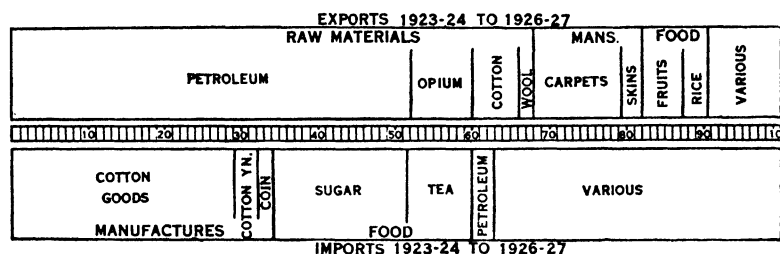


FIG. 138.—The foreign trade of Persia.

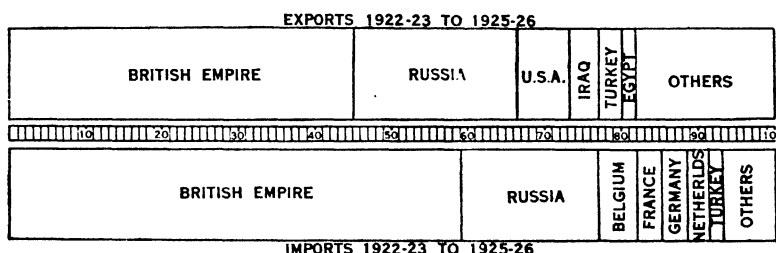


FIG. 139.—The direction of the foreign trade of Persia.

tracks, and motor transport has made tremendous strides in the country. It should be noticed that there are three main approaches to Persia: (1) from Russia to Tabriz, (2) from Baluchistan to Duzdap, (3) from Baghdad to the Mesopotamian frontier and thence by a good motor road to Tehran, the capital.

Foreign Trade.—The character and direction of the foreign trade is shown in Figs. 138 and 139, which are self-explanatory.

AFGHANISTAN

Position and Size.—Afghanistan has an area of about twice that of the whole of the British Isles, or roughly 250,000 square miles, and the country is situated on the surface of the plateau which separates Asiatic Russia from British India. Afghanistan is thus the guardian of that portion of India's mountain wall where

the wall is narrowest and weakest—hence the importance of Afghanistan in influencing the peace of the British Empire.

Physical Features.—Afghanistan falls into six simple regions :

1. Afghan Turkistan, or Bactria, is that portion of the great plain of Turkistan which lies within the Afghan borders. It is an area which can be irrigated and developed, but is very sparsely inhabited.

2. The Hindu Kush form a great mountain complex difficult of access, barren, and uninhabited. The average height of the mountains is over 15,000 feet and many peaks are over 18,000 feet.

3. Badakhshan occupies the north-east of Afghanistan, and is an isolated but beautiful region consisting mainly of forested mountains and valleys and pasture land.

4. Kabulistan is a convenient name for the series of plains which lie around the capital Kabul at a height of between

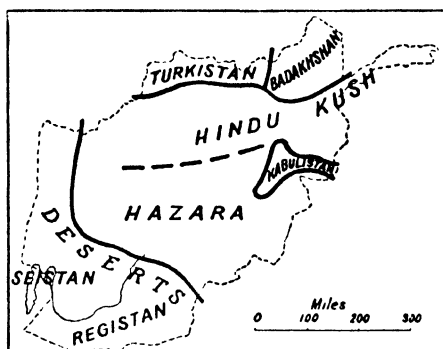


FIG. 140.—Afghanistan : natural regions (based on the descriptions of Furon).

4,000 and 6,000 feet above sea-level. Watered by the Kabul River and its tributaries, these plains constitute the richest and most densely populated part of Afghanistan, and here there is an abundant production of wheat, barley, millet, and fruit.

5. Hazara is a mountainous region occupying the whole of the centre of Afghanistan. Though fairly well-watered it is a little known, sparsely inhabited region, being most developed to the south-east along the Indian border, where it is inhabited by Pathans and where are found the towns of Kandahar and Ghazni.

6. The deserts of the south and west cover nearly a quarter of the country, and through the torrid, sand-covered wastes of this region the valley of the River Helmand forms a narrow region of fertile land. This country is inhabited mainly by the nomadic Baluchis.

Climate and Agriculture.—In general the climate of Afghanistan is very dry, characterized by great extremes of temperature and a light snowfall or rainfall coming mainly between January and April. In the summer the day temperatures are liable to exceed 110° in the drier parts of the south-west, and here the rainfall is only 2 or 3 inches, so that cultivation is limited to the oases or river valleys. Naturally the vegetation and the agriculture vary widely in the six natural regions which have been enumerated.

Development, Communications, and Trade.—Until recently Afghanistan was essentially a hermit nation, entirely forbidden to foreigners unless specially asked to carry out some work where technical knowledge was required. The enthusiastic attempts of a recent ruler to westernize the country resulted in disaster, at least to himself, but the country is likely to make a rapid progress in the near future. In this respect it should be noticed that there are three main lines of approach from the outside world: (1) from Russian Turkistan, where the railway actually reaches the Afghan border quite close to the Afghan town of Herat; (2) the well-known route through the Khyber Pass from Peshawar to Kabul, where a branch of the Indian railway system now reaches the frontier; and (3) from the town of Quetta in Baluchistan to the town of Kandahar in Afghanistan, where again a branch of the Indian railways reaches the Afghan border. Thus the trade and foreign relationships of Afghanistan must of necessity be mainly with either Russia or British India, or both. At present there is a small trade with India, the exports including sheepskins, fruit, and vegetables, the imports cotton goods and manufactured goods of varied character.

EXERCISES

1. The Mineral Production of India. Keep the table up to date from the *Statesman's Year Book*.

2. Agriculture in India. Keep the table and other figures up to date from the *Statesman's Year Book*.

3. Population of India. Keep the table up to date from the *Statesman's Year Book*.

4. The Foreign Trade of India. Figs. 35 to 39 should be kept up to date from the *Annual Report of the Balance of Trade* (League of Nations). In the *Statesman's Year Book* and other publications the figures given are not for calendar years. (Note 1 rupee = 1s. 6d.)

5. The Foreign Trade of Ceylon, Malaya, and China. Keep up to date from the *Statesman's Year Book*.

6. The Production of Japan. Keep up to date from the *Statesman's Year Book*.

7. The Foreign Trade of Japan. Keep up to date from the *Annual Report on the Balance of Trade* or the *Statesman's Year Book*.

EXAMINATION QUESTIONS

1. Write a concise geographical account of either Ceylon or Tasmania. (*Univ. London Inter. B. Com.*, 1925.)
2. Divide the Yangtze Basin into natural regions, with a short account of each region. (*Univ. London Inter. B. Com.*, 1925.)
3. Give a reasoned account of the distribution of rainfall in India, both as regards time of fall and total precipitation in the different regions. (*Univ. London Inter. B. Com.*, 1926.)
4. Give a brief account of the foreign trade of India. (*Univ. London Inter. B. Com.*, 1927.)
5. Point out what, in your estimation, geographical factors have contributed to the tardy economic development of China. Do you consider that Japan is or is not better endowed in this respect? (*Univ. London Inter. B.Sc. (Econ.)*, 1926.)
6. Relate the distribution of population to agricultural development in India. (*Univ. London Inter. B.Sc. (Econ.)*, 1927.)
7. Compare the relative merits of Calcutta and Delhi as capitals of India. (*Univ. Sheffield Inter. Hons.*, 1925.)
8. Write a geographical account of the position and development of Singapore, Hankow, Tientsin, Yokohama. (*Univ. Oxford Dipl.*, 1926.)
9. Compare the principal rivers of China as avenues of intercourse between the ports and the inland districts. (*Univ. Bristol Inter.*, 1926.)
10. Give an account of the Baghdad Railway from topographical, economic and political standpoints. (*Univ. Bristol Inter.*, 1925.)
11. Examine critically the view that China is overcrowded. (*Univ. Oxford Dipl.*, 1926.)
12. Estimate the economic prospects and possibilities of Chinese settlement in Manchuria. (*Univ. Oxford Dipl.*, 1926.)
13. Give an explanatory account of the distribution of population in India with special reference to areas of high density. (*Univ. Bristol Inter.*, 1926.)
14. Draw a sketch-map showing the division of either India or Australia into its principal vegetational regions; and give a reasoned account of one of these regions. (*Univ. Leeds 1st Year*, 1927.)
15. Draw a sketch-map showing the principal structural divisions of either India or Australia. Give an account of the physical geography of one of the major structural divisions you indicate. (*Univ. Leeds Inter.*, 1926.)
16. Give a reasoned account of the economic geography of Mesopotamia, with reference to probable and possible developments. (*Univ. London B.A. Hons. Econ. Geog.*, 1927.)
17. Examine the possibilities of developing a large-scale iron and steel industry in India. (*Univ. London B.A. Hons. Econ. Geog.*, 1927.)
18. Give a reasoned account of the external trade of Japan. (*Univ. London Inter. Arts*, 1928.)
19. Compare and contrast the agricultural conditions in the Punjab and Bengal, with special reference to natural and artificial water supply. (*Univ. London Inter. Arts*, 1928.)
20. Divide the Indian Empire into natural regions, giving an outline of the essential features of each. (*Univ. London Inter. Arts*, 1927.)
21. Show how the geographic conditions of the Japanese Islands have influenced the activities of the people. (*Univ. London Inter. Arts*, 1927.)
22. Write a brief account of irrigation in India. (*Univ. London Inter. B.Sc.*, 1928.)
23. Work out climatic contrasts between either China north of the Yangtse and China south of the Yangtse, or Burma and Annam. (*Central Welsh Board, Higher Cert.*, 1927.)

24. Compare and contrast the physical features of the two blocks of old rock known respectively as the Deccan and S.E. China. (*Central Welsh Board, Higher Cert., 1927.*)

25. Describe the main facts of distribution of rainfall *either* in India from October to May, *or* in Japan the year round, giving notes on agricultural utilization of this supply of moisture. (*Central Welsh Board, Higher Cert., 1927.*)

26. *Either*, Discuss the mineral resources of China.

Or, Compare the economic life of Java with that of Ceylon. (*Central Welsh Board, Higher Cert., 1927.*)

27. What regions of the Asiatic Monsoon lands have specialized in the cultivation of the tea plant and why? Could it be grown profitably in other regions outside these Monsoon lands? (*Central Welsh Board, Higher Cert., 1927.*)

28. *Either*, Compare and contrast Peking, Hankow, Shanghai, and Canton as Chinese centres.

Or, Estimate the importance of Victoria (Hongkong), Yokohama, and Singapore among the world's ports. (*Central Welsh Board, Higher Cert., 1927.*)

29. Discuss the distribution of rain during the dominance of the summer monsoon in India, giving notes on its relations to orographical features, on the one hand, and to crops on the other. (*Central Welsh Board, Higher Cert., 1928.*)

30. Give some account of the characteristics and distributions of *either* the chief mining *or* the chief manufacturing activities of the Indian people. (*Central Welsh Board, Higher Cert., 1928.*)

31. Discuss the physiographical, climatic, and agricultural features of any two provinces of China which show contrasted conditions. (*Central Welsh Board, Higher Cert., 1928.*)

32. The Monsoon Lands of Asia, though but a small fraction of the total land-surface of the earth, are the home of nearly one-half of the human race as well as of some of its oldest and most enduring civilizations. Estimate as thoroughly as you can how the human environments in those lands have contributed to this result. (*Central Welsh Board, Higher Cert., 1928.*)

33. *Either*, Give some account of the cities of Japan, noting their situations and sites and the activities of their people.

Or, Discuss the main features of Japan's trade at the present day. (*Central Welsh Board, Higher Cert., 1928.*)

34. Compare and contrast *either* (a) Kashmir and the basin of the upper Indus, *or* (b) Bengal and the United Provinces. (*Central Welsh Board, Higher Cert., 1929.*)

35. Choose *one* of the following as the subject of an illustrated general description:—Siam, Shantung, the Malay Peninsula, the Philippines. (*Central Welsh Board, Higher Cert., 1929.*)

36. Compare the positions and functions of Peking, Nanking, Hankow (Wuhan), and Canton. (*Central Welsh Board, Higher Cert., 1929.*)

37. Describe the physiographical features of Further India in such a way as to lead up to a division of this area into its natural regions. (*Central Welsh Board, Higher Cert., 1928.*)

38. Explain what is meant by a monsoon type of climate, and account for its distinctive features. (*Univ. Oxford and Cambridge, Higher Cert., 1928.*)

39. Give an account of the production and manufacture of cotton in Asia and indicate the areas and conditions of cultivation and manufacture. (*Joint Metric Board, Higher School Cert., 1929.*)

40. Describe fully the natural resources (other than mineral) of Asiatic Russia and give geographical reasons for the slow development of these resources. (*Joint Metric Board, Higher School Cert., 1929.*)

41. Describe the most striking contrasts in climate and relief between those parts of China which lie respectively to the north and to the south of the Yangtse-kiang. (*Joint Metric Board, Higher School Cert., 1929.*)

42. Describe the main features of the physical geography of Japan, and show how the distribution of the population is related to the physical conditions (*Joint Metric Board, Higher School Cert., 1929.*)

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